

## **SECTION II**

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## **ALTERNATIVES**



## II. ALTERNATIVES

**A. INTRODUCTION:** This section presents the Bureau of Land Management's (BLM's) alternative management approaches for 4.6 million acres in the northeastern part of the National Petroleum Reserve-Alaska (NPR-A). These alternatives are organized to present a range of actions that BLM could take to manage the surface and subsurface resources of the planning area consistent with the existing statutory direction for management of the NPR-A.

Before considering the various management strategies put forward for consideration in these alternatives, readers should be aware that some management actions will occur under all alternatives. These include fulfilling BLM's responsibility to convey land to individual Alaskan Natives and to Native corporations under the Native Allotment Act and the Alaska Native Claims Settlement Act (ANCSA), respectively. In cooperation with other Federal, State, and North Slope Borough (NSB) resource management agencies, BLM also will conduct studies, such as inventory and monitoring of resource populations and conditions under all alternatives. These studies will assess the health of biological resources, the location and significance of other resources, and the effectiveness of management practices in protecting these resources. The scope of these studies will reflect the level of impacting actions allowed and the protective measures imposed under the plan adopted through this Integrated Activity Plan/Environmental Impact Statement (IAP/EIS). For a general description of the anticipated inventory and monitoring program, see Appendix A.

**B. LAND USE EMPHASIS AREAS:** Each alternative contains management actions for the entire planning area. Certain parts of the area, however, are particularly important because of their surface-resource values. In the IAP/EIS, these areas are called Land Use Emphasis Areas (LUEA's), and much of the discussion of the alternatives is organized to show what management is proposed in each alternative for each LUEA. Nearly all LUEA's identify specific resource values, such as important bird or caribou habitat, that are linked to specific pieces of land. In this way, BLM will be able to focus specific management measures for each resource on the appropriate lands. Some alternatives propose special

designations for some LUEA's, and nearly all LUEA's have stipulations identified to protect specific resources within them.

While LUEA's provide much of the structure of the presentation of the alternatives, they are not in themselves administrative or legislative designations, and they carry with them no new regulatory authority. They simply are tools that BLM is using to identify geographic areas, generally important for specified resources, where it is considering management emphases to meet its responsibilities under existing authorities.

The primary existing authority for managing the NPR-A is the National Petroleum Reserves Production Act (NPRPA). Under the Act, the Secretary of the Interior has very broad authority. His authority to protect surface resources is especially high in "Special Areas" designated by the Secretary. Special Areas are those areas within the NPR-A containing "significant subsistence, recreational, fish and wildlife, historical, or scenic value." Federal regulations (43 CFR 2361.1(c)) provide for the Secretary to undertake maximum protective measures for Special Areas consistent with the purposes of the NPRPA. Parts of two Special Areas are in the planning area: the Teshekpuk Lake Special Area (TLSA) and the Colville River Special Area (CRSA). Both encompass large geographic areas and are important to a variety of resources. See Section III.B.1 for a more detailed description of these Special Areas. All the LUEA's identified in the IAP/EIS are entirely or partly in the TLSA or the CRSA. Maximum protection of surface values within Special Areas is provided through the restrictions on various activities included in each alternative and the stipulations described in Section II.C.7.

Each LUEA is described below and depicted on an accompanying map. Table IV.D.1 highlights some of the management proposed for each LUEA. Stipulations also have been developed to control activities in the different LUEA's.

**1. Teshekpuk Lake Watershed:** The LUEA's boundary coincides with that of the TLSA within the planning area, although the latter's boundary extends to the west beyond the planning area. (Fig. II.B.1). This LUEA is

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one of the most productive, diverse, and unique wetland ecosystems on the North Slope. Teshekpuk Lake's range of habitat types includes a 20-foot (ft) deep basin and a complex shoreline that features bays, spits, lagoons, islands, beaches, and extensive shoal areas. The waterflow patterns in this extraordinarily flat landscape are complex, and the outlets and inlets can reverse flow, depending on lake levels and stream flows. The Miguakiak River reversed its flow in 1977, so that discharge from breakup flooding on the Ikpiupuk River flowed into Teshekpuk Lake. There also are numerous deep lakes, some as deep as 50 ft, around Teshekpuk Lake that provide overwintering habitat for fish. Numerous small streams within the watershed provide riverine habitat for aquatic and migratory animals.

**2. Goose Molting Habitat:** This LUEA is wholly encompassed by the TLSA (Fig. II.B.2). The lakes to the north and east of Teshekpuk Lake are the most significant habitat for molting black brant, Canada geese, and greater white-fronted geese in the Arctic. Up to 23 percent of the Pacific flyway population of brant molt in this area (33,000 were counted one year). Up to 27,000 Canada geese have been counted. Up to 28,000 molting greater white-fronted geese and snow geese also use the area. Molting geese, which are highly sensitive to human disturbance, are present in the area from late June to mid- to-late August.

**3. Spectacled Eider Breeding Range:** This LUEA is wholly encompassed by the TLSA (Fig. II.B.3). The 1997 spectacled eider population on the North Slope is estimated to be 5,827 (uncorrected for visibility), which is by far the largest breeding population in North America. The 1997 population is estimated to be 14,300 with the visibility-correction factor applied. About 16 percent of the North Slope population nests within the planning area near Teshekpuk Lake, mostly to the north and west of the lake. The spectacled eider is listed as threatened under the Endangered Species Act (ESA).

Since the planning process began, the Steller's eider has been listed as threatened. Steller's eiders are known to nest in the planning area, but densities are too low to estimate concentration areas. For this reason, we have not developed a LUEA for the Steller's eider.

**4. Teshekpuk Lake Caribou Habitat:** This LUEA is wholly encompassed by the TLSA (Fig. II.B.4). Caribou of the Teshekpuk Lake Herd calve from late May to mid-June. Since 1976, studies show that the main areas for calving can shift somewhat within the broad area identified on Fig. III.B.5.a-1, with concentrations occurring in several different locations around the lake from year to year. For the remainder of the summer, areas of shorelines, barren dunes, and ridges can provide relief from intense insect harassment, which can significantly affect energy

budgets and future productivity of cows. The land between Teshekpuk Lake and the Beaufort Sea from the Ikpiupuk River to the Kogru River are particularly valuable for this purpose.

**5. Fish Habitat:** This LUEA contains numerous waterbodies that provide important spawning, migration, rearing, and overwintering habitat for both anadromous and resident species of fish (Fig. II.B.5). Current fish use includes a substantial subsistence harvest by the residents of Barrow and Nuiqsut and a commercial take at the mouth of the Colville River. The LUEA extends ½ mile (mi) on the east side of the Ikpiupuk River, both sides and the bed of the Miguakiak River, the west side of the Colville River, and around (and including the bed of) Teshekpuk Lake (where BLM manages the land). It extends ¼ mi from both sides of portions of Fish and Judy creeks and around the perimeter of any fish-bearing lake in the deep-lake zone identified on Fig. II.B.5. It also includes the beds of these portions of the two streams and these lakes. The Miguakiak River, Teshekpuk Lake, and the northern part of the Ikpiupuk River are within the TLSA. The west side of the Colville River is within the CRSA.

**6. Colville River Raptor, Passerine, and Moose Area:** The boundary of the LUEA extends from the eastern boundary of the planning area to 1 mi west of the bluffs of the Colville River from approximately Ocean Point to the southern end of the planning area and 1 mi either side of bluffs on the Kogosukruk and Kikiakrorak rivers (Fig. II.B.6). The part of this LUEA on the Colville is within the northern portion of the CRSA as are the very northern reaches of the Kogosukruk and Kikiakrorak rivers. The lower two-thirds of the Colville River supports the highest concentrations of raptors, passerines, and moose on Alaska's North Slope. More than half of the known peregrine, gyrfalcon, and rough-legged hawk territories along this reach are in the planning area. Overall, the population of peregrine falcons has increased since its low in 1973 at the time it was listed as endangered under the ESA. It is now delisted. Current population levels should be maintained, if the peregrine is to remain off the list. The raptors nest on bluffs adjacent to the river and are sensitive to disturbance. The moose and passerine bird habitats along the Colville River represent a mixed ownership of Federal, State, and Arctic Slope Regional Corporation lands. Under all alternatives except Alternative A, the BLM will propose and work toward developing a cooperative agreement with the other landowners to include part of the LUEA in a Bird Conservation Area (BCA) under the Partners in Flight program (Fig. II.B.7). While this designation carries no mandated restrictions, it will highlight for all three land managers a habitat with special values (see Sec. II.F.9 for a description of BCA's).

**7. Umiat Recreation Site:** This LUEA consists of a small tract of BLM land adjacent to Umiat's airstrip (Fig. II.B.8). It is within the CRSA's boundaries. The airstrip and other nearby lands are owned by the State. The BLM land could be used to access the remains of previous oil-exploration activities in the area and provides views of the Colville River. Development of an airpark and interpretive trails, considered in some alternatives, would be a cooperative endeavor with the State of Alaska.

**8. Scenic Areas:** This LUEA is within the boundaries of the CRSA (Fig. II.B.9). The Scenic Areas LUEA is based on a scenic quality study completed as part of the report required by Section 105(c) of the NPRPA. The study identified two sections of the Colville River as having high scenic value. One section extends from the southern tip of the planning area to Umiat. It has a scenic class rating of A, which means that it has a great deal of visual variety, contrast, and harmony. The other section has a scenic class rating of B, meaning that it has a moderate amount of visual variety, contrast, and harmony. This section extends from Umiat to Sec. 10, T.8N., R.3E., Umiat Meridian. The LUEA extends at least 1,000 ft west of the eastern boundary of the planning area and in some cases can extend farther, where a larger viewshed exists.

**9. Pik Dunes:** The Pik Dunes LUEA overlaps the southern boundary to the TLSA (Fig. II.B.10). The dunes complex occupies roughly 15 square miles. Its maximum extent north/south is 5.5 mi, while its maximum east/west extent is 5.0 mi. The Pik Dunes, which form a basin containing five lakes, are part of a larger dune area that has been stabilized/vegetated for at least several thousand years. The Pik Dunes are unique, because they are still exposed and active. Beyond their geologic and scenic uniqueness, the dunes provide (1) insect-relief habitat for caribou, (2) habitat for several uncommon plant species, and (3) data critical to understanding major climatic fluctuations over the last 12,000 years.

**10. Ikpikpuk Paleontological Sites:** The Ikpikpuk Paleontological Sites LUEA extends the entire river's length within the planning area (Fig. II.B.12). Its boundaries lie along section lines to the east of the river that are, on average, 1 mi from the river's edge. Its northern reach is within the western part of the TLSA. Along most of its length, the river cuts through mainly Quaternary age fossil-bearing formations, causing many specimens to be deposited on the shore or sandbanks. Most of the remains that erode out are illegally collected.

**11. Kuukpik Corporation Entitlement:** The lands in this LUEA are subject to possible conveyance to Kuukpik Corporation, the ANCSA corporation for the village of Nuiqsut (Fig. II.B.13). The corporation has approximately 21,000 acres remaining in its entitlement

and it is in the process of making its final selections from the approximately 120,000 acres in this LUEA. Selected lands would be conveyed to private ownership and would be unavailable for Federal leasing. Some of the available lands are within the CRSA.

**12. Potential Colville Wild and Scenic River:** The LUEA includes a ½ mi strip on the west side of the Colville River from the southern planning boundary to Sec. 32, T.10N., R.5E. Umiat Meridian; within the planning area, the east side of the Colville and its bed are in either State or Native (ASRC) ownership (Fig. II.B.14). This LUEA is within the CRSA boundaries. Field studies indicate that the river has outstandingly remarkable values because of its importance to peregrine falcons and as a source for paleontological data. The river was nominated for inclusion in the Wild and Scenic River (WSR) System in 1980, but no congressional action was taken. This issue is being revisited, and BLM has determined that the river is *eligible* for inclusion in the WSR System.

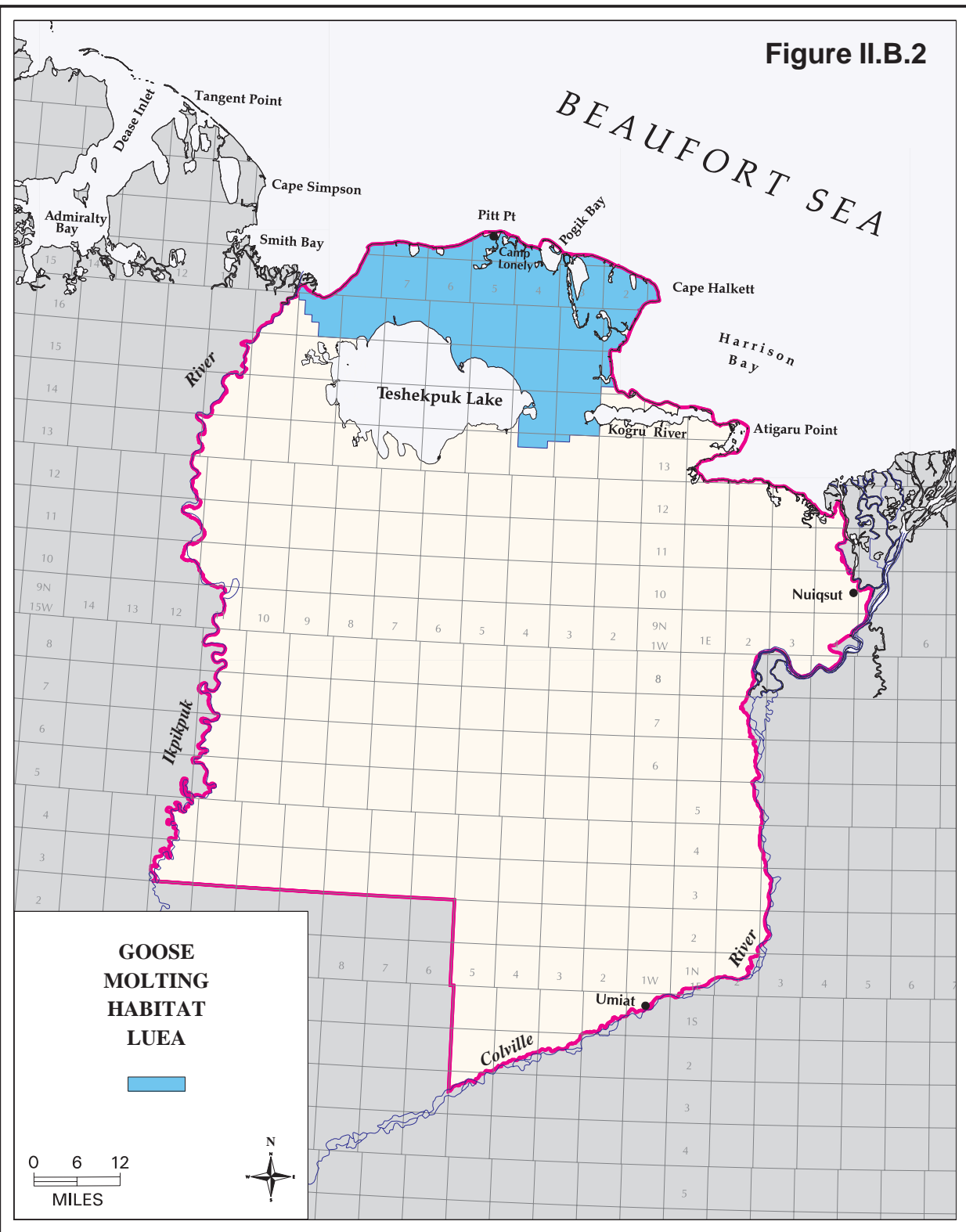
The BLM will use this planning process to determine whether or not the river is *suitable* for inclusion in the WSR System and, if it is determined suitable, whether it should be managed as a wild, scenic, or recreational river. Appendix G outlines the criteria and issues that will be addressed to make the suitability determination. If the Colville River is determined to be suitable in the Record of Decision, the WSR Act requires that the river corridor receive special protection. It will be managed, on an interim basis, in a way that is consistent with its tentative classification. Management actions and authorized uses will not be allowed to adversely affect this tentative classification. This management would be most restrictive under a tentative wild classification and least restrictive under a recreational classification. Appendix H describes the general management objectives and standards assigned to designated rivers and rivers under special protection. If BLM determines that the river is unsuitable for inclusion, it will be managed in a manner that is consistent with the Colville River Raptor, Passerine and Moose and Scenic Areas LUEA's. Refer to Section III.C.6.a.(1)(g)4 for the Colville River Suitability Assessment.

Figure II.B.1



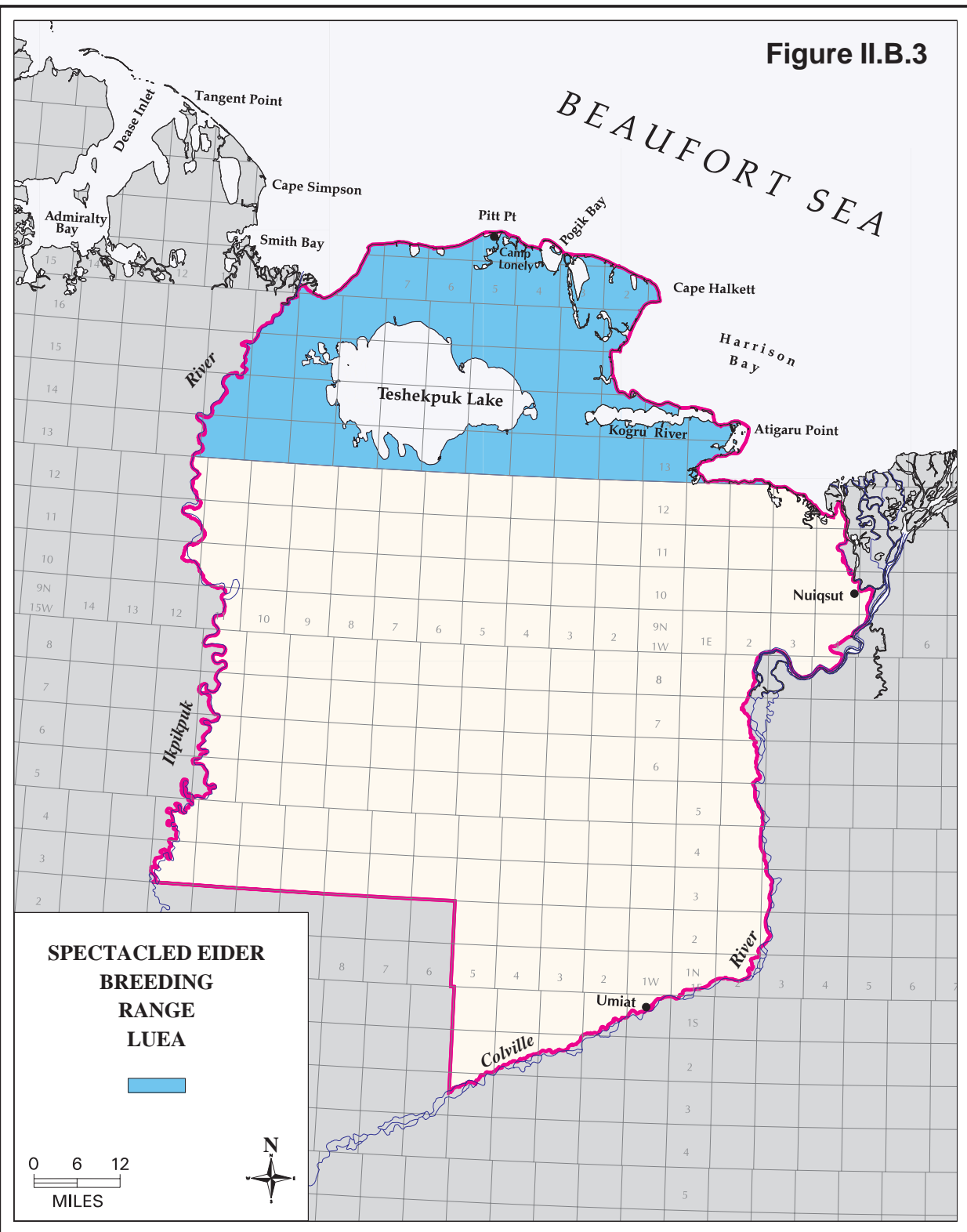
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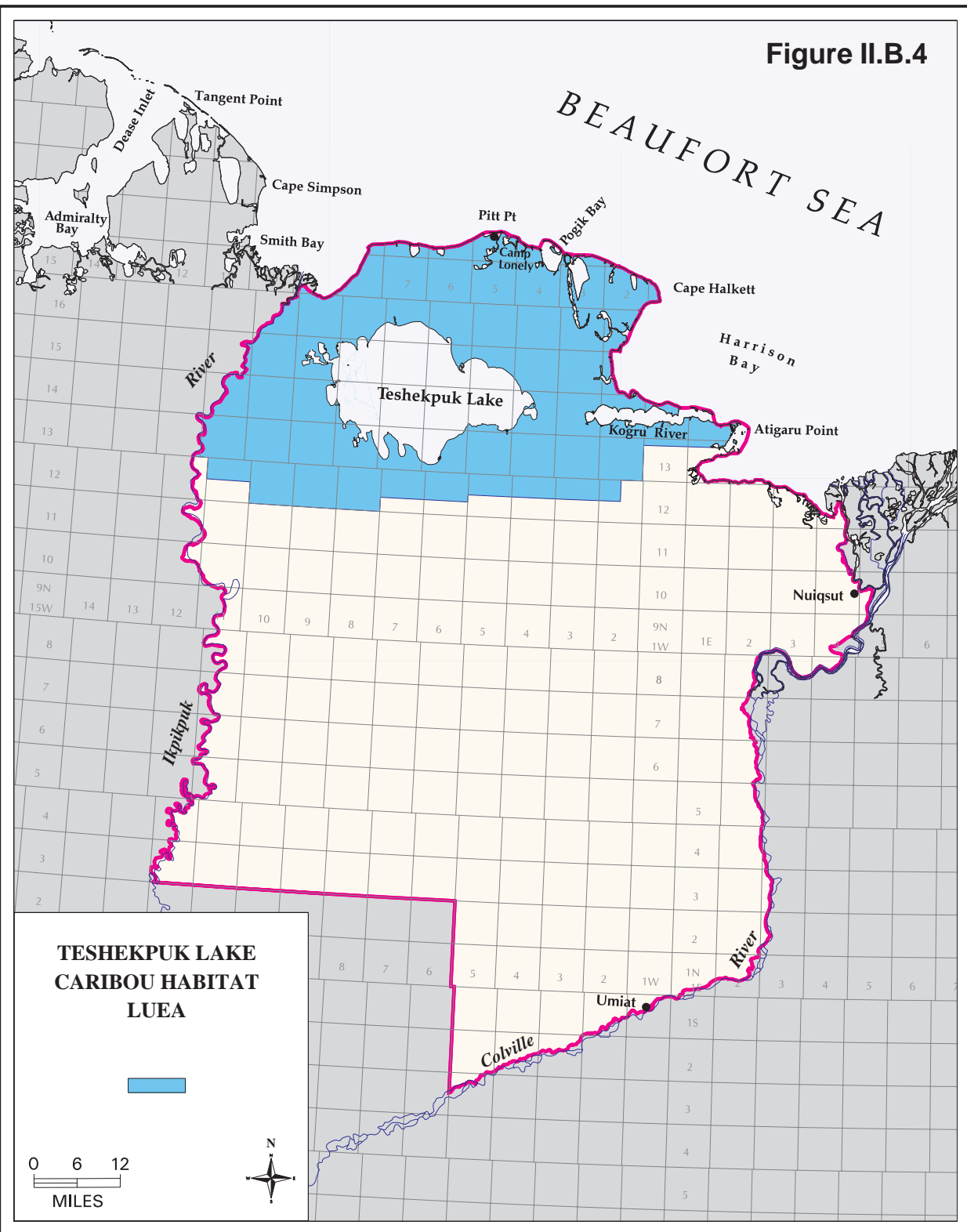
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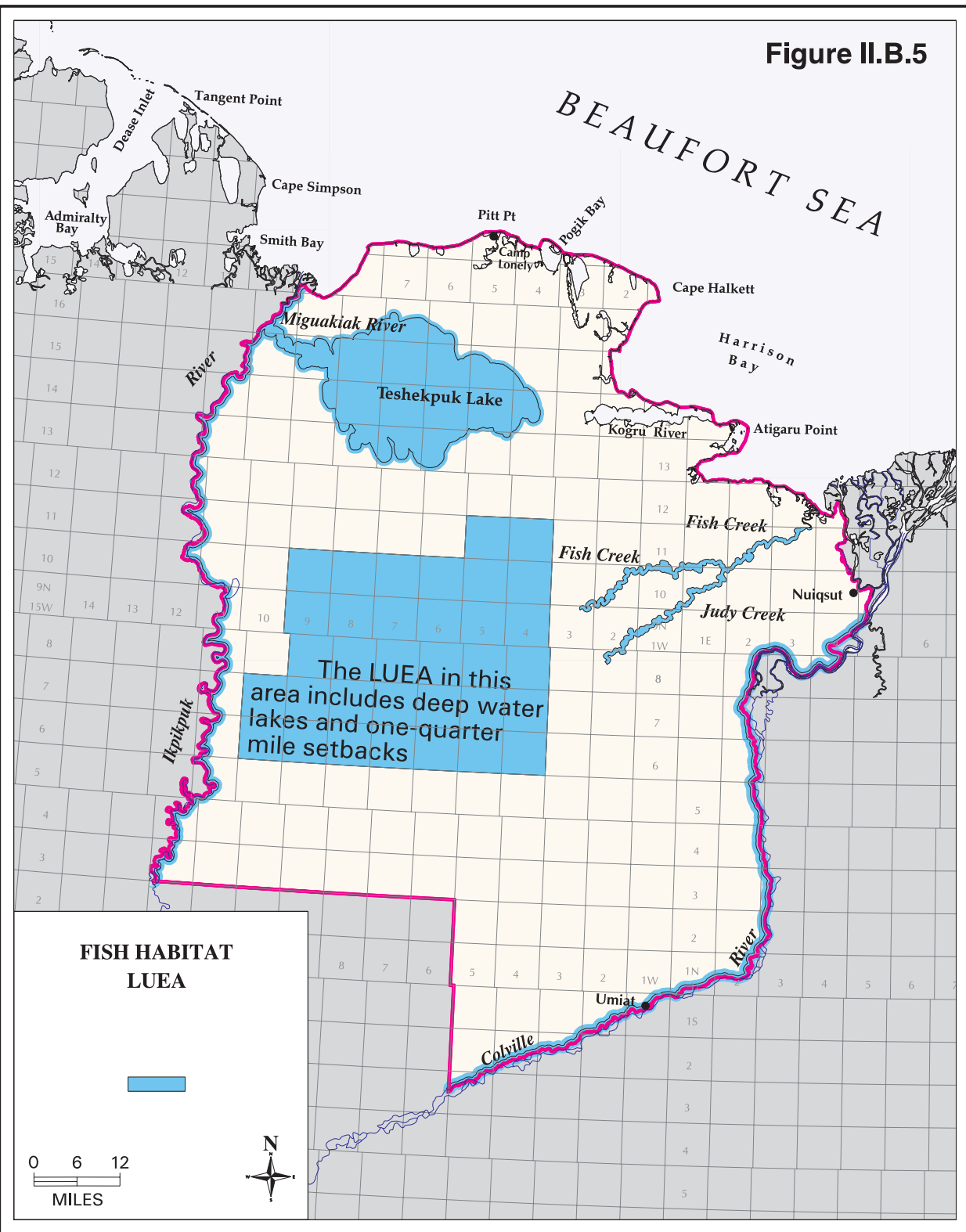
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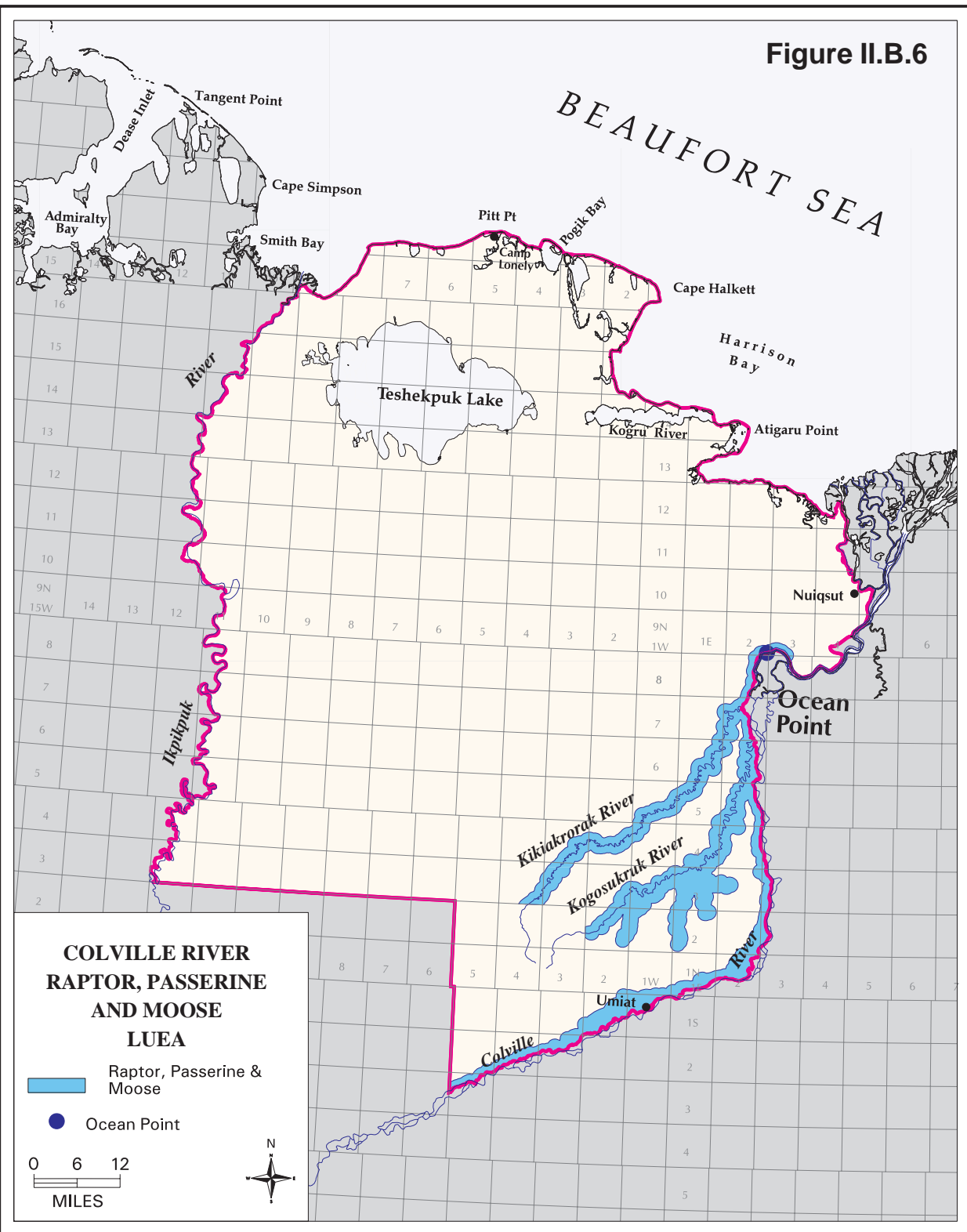
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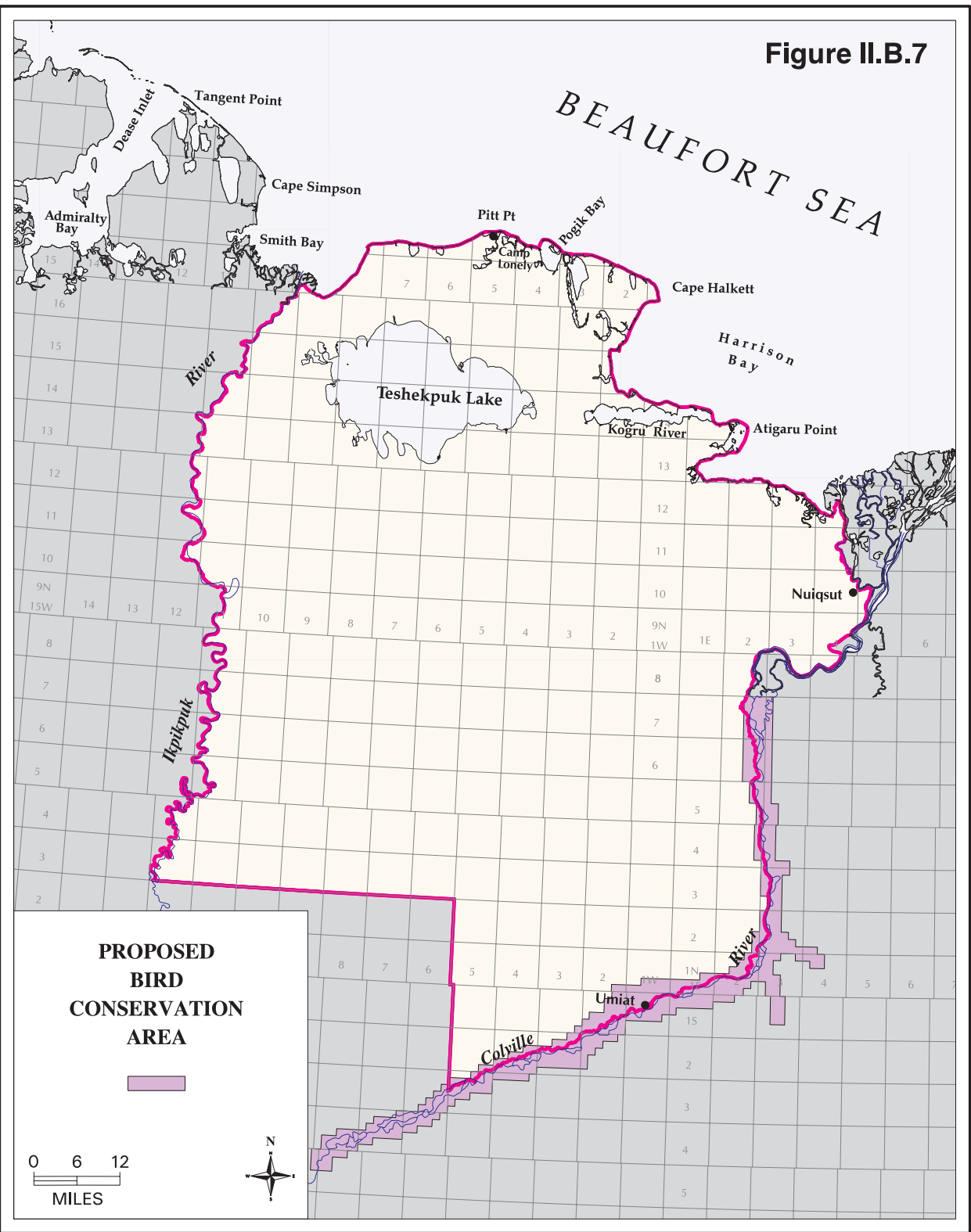
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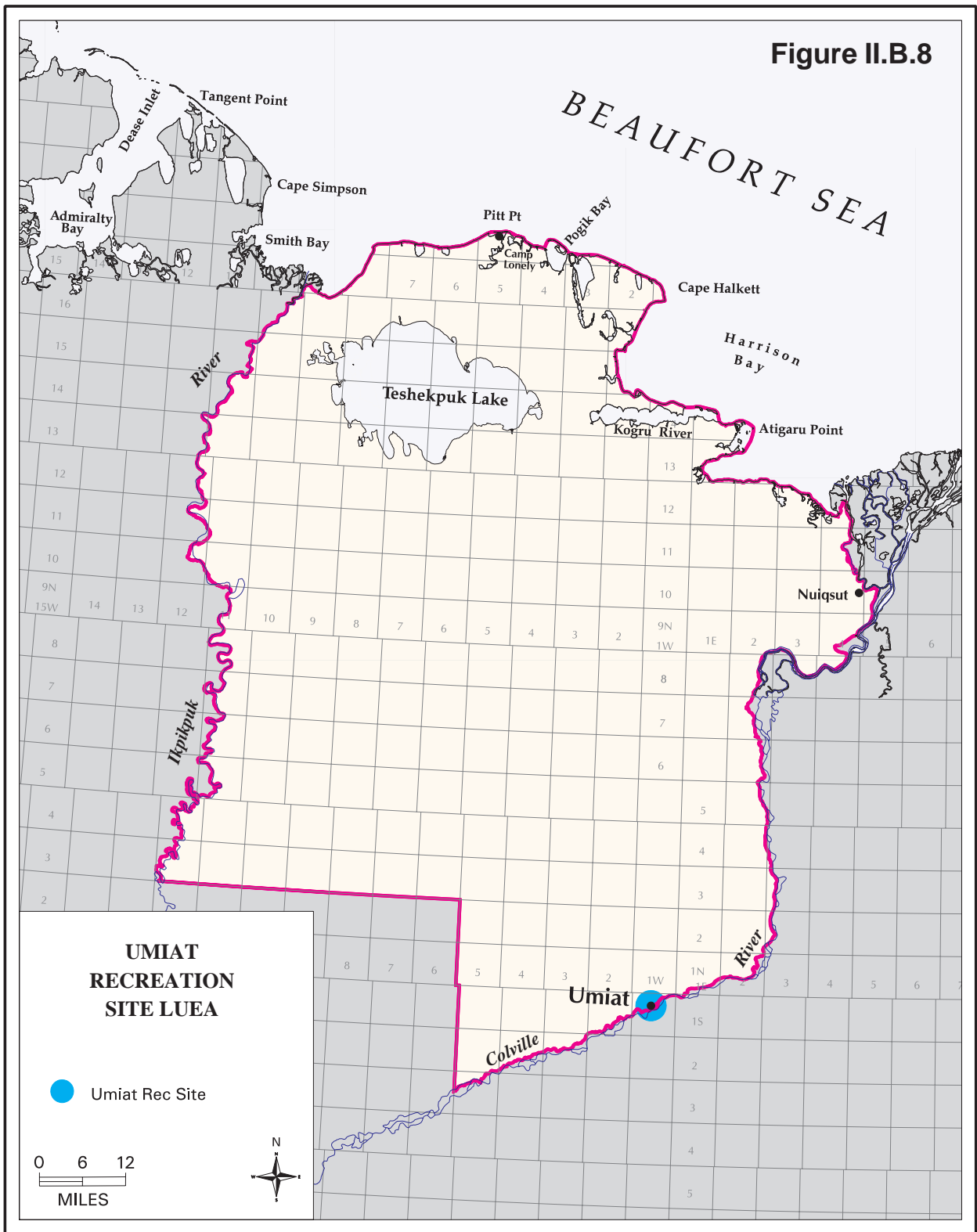
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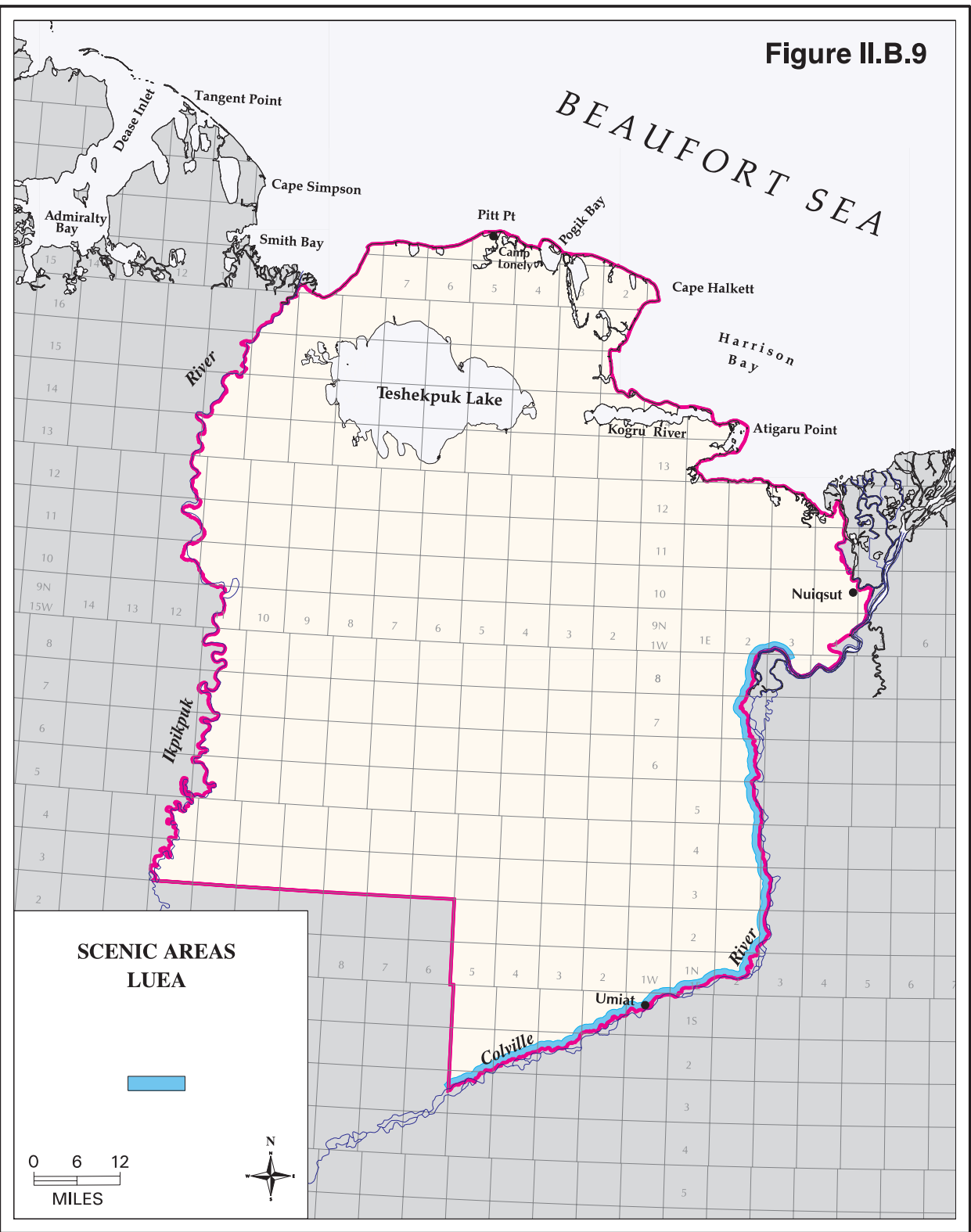
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Figure II.B.9

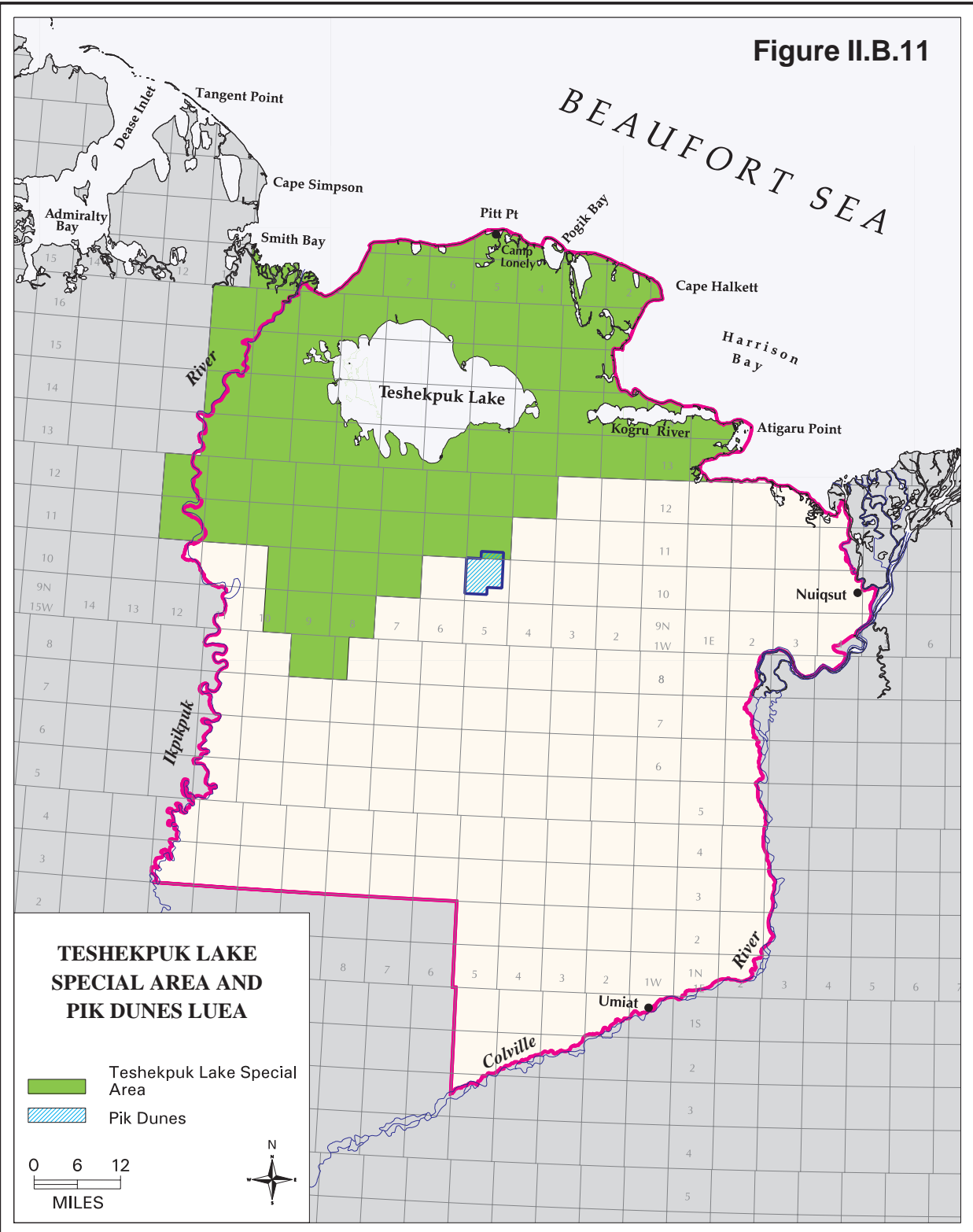


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Figure II.B.10

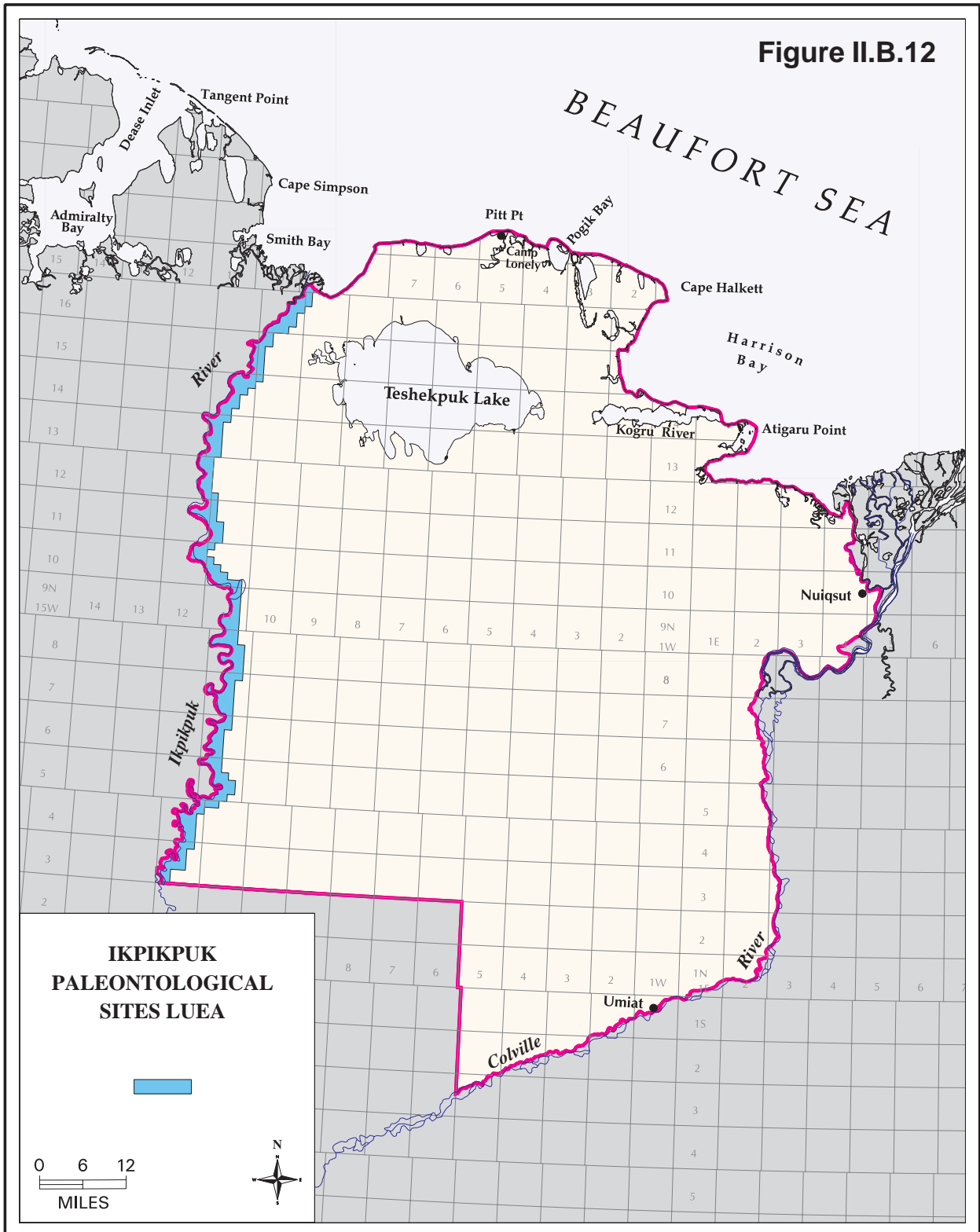


Figure II.B.11



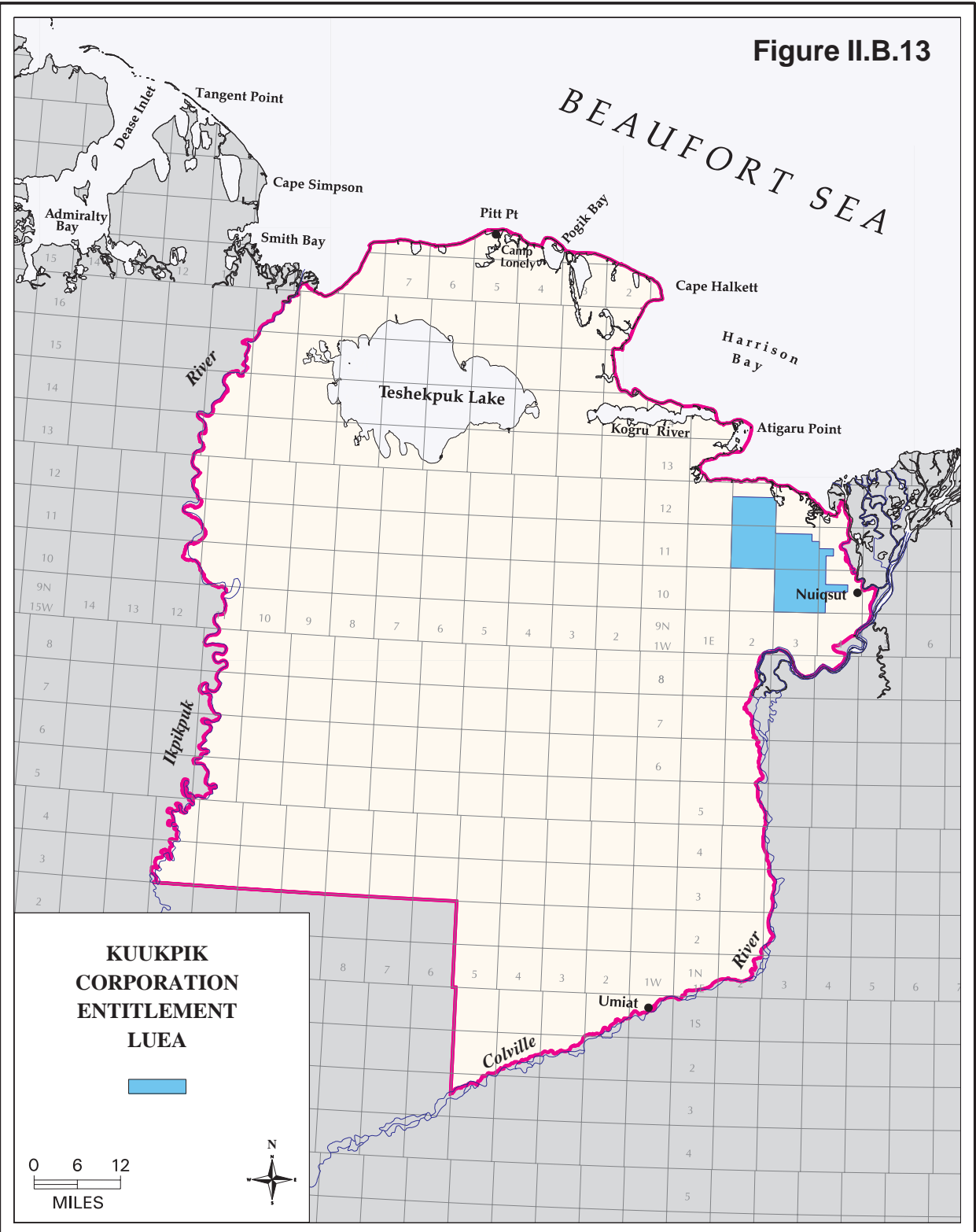
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Figure II.B.12



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Figure II.B.13



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Figure II.B.14



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**C. ALTERNATIVES:** The descriptions of the alternatives that follow provide a general picture of how BLM will manage its lands in the planning area. Getting a complete and detailed understanding of how the alternatives protect some resources while authorizing a variety of activities requires a close reading of the stipulations in Section II.C.7.a for the Preferred Alternative and Section II.C.7.b for the other alternatives. (Stipulations listed in the 1983 oil and gas leasing EIS for the NPR-A also apply for Alternative A. However, because oil and gas leasing does not occur under Alternative A, the stipulations from that EIS have no practical effect.) These stipulations indicate where, when, and under what conditions certain activities may or may not occur in the planning area. In addition, under each alternative BLM would engage in an inventory and monitoring program reflecting the activities allowed by the respective alternative and the resources potentially impacted under the alternative (see Appendix A).

Note that all lands in the planning area as well as all areas of high oil and gas potential in the area do not possess equally promising oil prospects. Given this fact, the anticipated oil reserves that might be leased under each alternative, as presented in Sec. IV.A (Tables IV.A.1.b-4 and IV.A.1.b-6), do not increase proportionately to either the total acres made available or to the areas of high oil and gas potential made available.

**1. Preferred Alternative:** The Preferred Alternative falls in between and combines elements from Alternatives C and D, with added surface protection provided for riparian areas similar to Alternative B. It protects caribou calving areas in the Teshekpuk Lake Caribou LUEA by not making available 48 percent of the LUEA for oil and gas leasing (including the key caribou calving area), buffered by an area (30% of the LUEA) available for leasing but with no surface oil and gas activities allowed (including exploratory drilling), and a small portion (22%) available, subject to stipulations, specifically designed to limit impacts. Alternative C would have made the Teshekpuk Lake Caribou LUEA unavailable for leasing. The Preferred Alternative maximizes protection for molting geese by making virtually all of the Goose Molting Habitat LUEA unavailable for leasing, similar to the action proposed in Alternative D. The Preferred Alternative would make 87 percent of the planning area (67% of the area of high oil and gas potential) available for oil and gas leasing while maintaining protection for high-value waterfowl and caribou calving habitats, important subsistence use areas, and areas of scenic and recreational significance. A 589,000-acre area north and east of and including much of Teshekpuk Lake would not be available for leasing; the remaining 4,007,000 acres would be available subject to certain restrictions and stipulations (see Fig. II.C.1-6).

Among the protective measures for the Preferred Alternative is one that would forbid most types of surface use for oil and gas activities. These restrictions would be imposed on (a) the northern portion of the Teshekpuk Lake Special Area to protect important waterfowl and caribou habitat and significant subsistence-use areas (this area will be termed the Teshekpuk Lake Surface Protection Area); (b) along Fish and Judy creeks and the Ikpikpuk and Miguakiak rivers to accommodate subsistence concerns, and (c) along the Colville, Kikiakrorak, and Kogosukruk rivers (and some tributaries of the Kogosukruk River) to address concerns for subsistence use and raptor habitat. These areas would be available for oil and gas leasing except for parts of the first-named area, depicted in green without hatching, and could be developed from surface facilities located outside of the restricted areas (see Fig. II.C.1-6). The area unavailable for leasing (green without hatching) is far beyond the reach of any modern drilling operations that could be placed on lands on which surface facilities would be allowed.

The Preferred Alternative would prohibit construction of roads (other than temporary ice roads) connecting the planning area with the existing road network outside the planning area.

The Preferred Alternative includes its own set of stipulations (Sec. II.C.7.a). These are a modest revision of those presented in the draft IAP/EIS in response to the public comment received on the draft IAP/EIS, and are designed to provide maximum protection of the Special Areas, consistent with the NPRPA. Certain stipulations apply to all permitted activities, while others are specific to oil and gas. Forty-five of the 79 stipulations included in the Preferred Alternative apply to recreation, seismic activities, overland moves, and authorized uses other than oil and gas in the planning area. These stipulations address topics such as waste management, wildlife/human interaction, spills, fuel storage, ice-road construction, protection of water quality and fish resources in inland and coastal waterbodies, protection of riparian and tundra vegetation, and ground-vehicle and aircraft disturbance of wildlife. To fully comprehend the Preferred Alternative, it is necessary to review these stipulations.

The Preferred Alternative also establishes procedures and advisory bodies to address subsistence and research (inventory and monitoring) concerns. Stipulation 61 describes a conflict avoidance procedure to address subsistence concerns with oil and gas exploration and development activities. Through it, lessees would consult with the NSB, affected communities, and the Subsistence Advisory Panel, a special body created to represent subsistence issues (Sec. II.F.6). Under the Preferred Alternative, representatives of Federal, State, and NSB agencies with biological expertise would participate on an

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Interagency Research and Monitoring Team. This team would coordinate research and monitoring projects related to effectiveness of stipulations and surface resource impacts. It also would seek advice from the Subsistence Advisory Panel (Sec. II.F.7).

Other major elements of the Preferred Alternative include the following:

### **Teshkepuk Lake Special Area**

***Teshkepuk Lake Surface Protection Area:*** This area is depicted in green on Figure II.C.1-6. It encompasses all of the Goose Molting Habitat LUEA, that part of the Teshkepuk Lake Caribou Habitat LUEA with the most important calving and insect-relief areas, and all of Teshkepuk Lake. It is of special importance to subsistence users because of the caribou and fish resources in the area and long-standing subsistence use of the area. Within this area:

- No permanent oil and gas surface occupancy would be allowed. (Note: Unless otherwise noted, reference to no permanent oil and gas occupancy would prohibit pads, rigs, platforms, gravel roads, airstrips, gravel or other material extraction pits, and pipelines.)
- No seasonal exploratory or delineation wells would be allowed.
- Ice roads, seismic activities, winter overland moves, and other nonpermanent activities other than exploratory or delineation well drilling may be authorized.
- Oil and gas leasing would be allowed in the 5- to 6-mile band (hatched area on Fig. II.C.1-6) at the southern and western edge of this area. Rights to the subsurface resources under leases in this area would not include the uppermost 500 feet.
- Restrictions on aircraft activity associated with permitted activities.

### ***Miguakiak River:***

- No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within ½ mile of the river.
- An area within 3 miles of the river is of particular sensitivity for subsistence activities and will receive special consideration within the consultation framework described in Stipulation 61.

### **Colville River Special Area**

#### ***Colville River:***

- The BLM would develop a Colville River Management Plan for the Special Area in cooperation with adjacent landowners and other affected parties to address subsistence, wildlife, recreation,

paleontological, and other issues. Prior to launching such a plan, the agency will conduct a raptor workshop to review scientific literature on disturbance to raptors and identify potential additional mitigation measures. Creation of a Bird Conservation Area as described in Section II.B.6 would be explored with other landowners as part of the Colville River Management Plan.

- No permanent oil and gas surface facilities, except essential pipeline crossings, would be allowed within 1 mile of the west bluffs (or bank if there is no bluff) extending the length of the river in the Colville River Raptor, Passerine and Moose LUEA.
- An area within 2 miles of the west bluff (or bank if there is no bluff) extending the length of the river in the Colville River Raptor, Passerine and Moose LUEA is of particular sensitivity for subsistence activities and will receive special consideration within the consultation framework described in Stipulation 61.
- The Scenic Areas LUEA will be managed for VRM I upstream of Umiat and VRM II below Umiat, although exceptions to this management guidance would be allowed for subsistence structures and essential pipeline crossings.
- Even though the physical characteristics and associated resource values make the Colville River “eligible” for designation, the river would not be considered “suitable” for WSR designation, because other landowners within the potential WSR corridor do not support this action and, without their cooperation, management as a WSR would be ineffective.

### ***Kikiakrorak and Kogosukruk Rivers:***

- (Note: The following discussion refers only to portions of the Kikiakrorak River downstream from T. 2 N., R. 4 W., U.M. and the Kogosukruk River downstream from T. 2 N., R. 3 W., U.M.)
- No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within 1 mile of the bluff (or bank if there is no bluff) on either side of the rivers and several of the Kogosukruk tributaries.
- An area within 2 miles of the top of the bluff on either side of the rivers and several of the Kogosukruk's tributaries is of particular sensitivity for raptor nesting and will receive special consideration within the consultation framework described in Stipulation 61.
- The BLM would recommend that the Secretary of the Interior add an area encompassing approximately 2 miles on either side of the rivers and the Kogosukruk's tributaries to the Colville River Special Area and include management considerations for these areas in the Colville River Management Plan.

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### ***Umiat Recreation Site LUEA:***

- Incorporate plans for future management of this area in the Colville River Management Plan. Emphasis is to be on supporting public health and safety.

### **Other Specific Areas in the Planning Area**

#### ***Fish Creek:***

- No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within 3 miles of the creek downstream from the eastern edge of Sec. 31, T. 11 N., R. 1 E., U.M. or within ½ mile of the creek farther upstream.
- An area within 2 miles of the creek in and above Sec. 31, T. 11 N., R. 1 E., U.M. is of particular sensitivity for subsistence activities and will receive special consideration within the consultation framework described in Stipulation 61.

#### ***Judy Creek and Ikipikuk River (in the planning area):***

- No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within ½ mile of these waterbodies.
- An area within 2 miles of these waterbodies is of particular sensitivity for subsistence activities and will receive special consideration within the consultation framework described in Stipulation 61.

#### ***Pik Dunes LUEA:***

- No surface structures, except essential transportation crossings, would be allowed.
- The BLM would recommend that the Secretary of the Interior add the LUEA to the Teshekpuk Lake Special Area.

#### ***Deep-Water Lakes:***

- No permanent oil and gas surface facilities would be allowed in the lake bed of fish-bearing lakes in this portion of the Fish Habitat LUEA (Fig. II.B.5). Nor would such occupancy be allowed within ¼ mile of these fish-bearing lakes.

#### ***Kuukpik Corporation Entitlement:***

- In its first oil and gas lease sale, BLM would defer from leasing those lands Kuukpik identifies for selection. The BLM has asked Kuukpik to identify the acres it would like to have deferred.

**2. Alternative A:** This alternative is the No Action alternative (Fig. II.C.1-1). It reflects current BLM management of the planning area and a decision BLM has made that the 1983 EIS for the last leasing program is inadequate for a new program. No new oil and gas leasing would occur, no new designations such as Special Areas or Wild and Scenic Rivers would be proposed, and protection of surface resources from other activities would be

provided by existing Special Area designations, Special Management Zones, and existing stipulations. Under this alternative two options exist with regard to seismic activity. Winter seismic activity could occur throughout the planning area (the existing management situation), or seismic activity could be prohibited.

**3. Alternative B:** Alternative B would make 53 percent of the planning area available for oil and gas leasing while emphasizing protection of specific surface resources. Under Alternative B, 28 percent of the area considered as being high in oil and gas resource potential is made available for leasing. Given economic factors such as distance to infrastructure, probability of discovery, and anticipated size of discovery, this alternative provides the most restrictive case at which it is anticipated BLM could have a viable oil and gas leasing program. With the exception of the Kuukpik Corporation Entitlement LUEA, none of the LUEA's would be made available for oil and gas leasing (Fig. II.C.1-2). Leasing in the Kuukpik Corporation Entitlement LUEA would be postponed until the corporation's entitlement has been satisfied. Aboveground pipelines could cross all lands except the Potential Colville Wild and Scenic River LUEA, and all lands would be available for seismic studies. Protective measures include applying the relevant restrictions in Section II.C.7, recommending a portion of the Colville be included as a wild river in the WSRS, proposing a Bird Conservation Area along the Colville River, designating the Ikipikuk Paleontological Sites LUEA as a new Special Area to protect paleontological resources, and adding the Pik Dunes LUEA to the Teshekpuk Lake Special Area. Upon Secretarial designation of the Ikipikuk Paleontological Sites LUEA as a Special Area, BLM would develop a plan for the new Special Area to determine appropriate additional management measures, such as research studies and interpretive and educational actions to enhance understanding of the paleontology of the North Slope. Upon completion of an agreement with the State and ASRC to nominate a Bird Concentration Area (BCA), the BLM would join with the other landowners in a study of this neotropical migratory bird habitat, the populations of these birds in the area, and the appropriate management desirable for protection of the animals and their habitat. Upon Congressional designation of the Colville River as part of the WSR System, the BLM would conduct a River Management Plan jointly with the State and ASRC.

**4. Alternative C:** Alternative C would make 72 percent of the planning area (35% of the area of high oil and gas potential) available for oil and gas leasing (Fig. II.C.1-3). The Teshekpuk Lake Caribou Habitat LUEA and the Goose Molting Habitat LUEA, which contain important caribou and waterfowl habitat, would not be made available. The Kuukpik Corporation Entitlement LUEA would be available for oil and gas leasing, and all

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appropriate sale and leasing revenues due ASRC would be put in escrow. Aboveground pipelines could cross all lands, and all lands would be available for seismic studies. Protective measures include applying the relevant restrictions in Section II.C.7, recommending a portion of the Colville be included as a scenic river in the WSRs, proposing a BCA along the Colville River, designating the Ikpiukuk Paleontological Sites LUEA as a new Special Area to protect paleontological resources, and adding the Pik Dunes LUEA to the Teshekpuk Lake Special Area. Upon Secretarial designation of the Ikpiukuk Paleontological Sites LUEA as a Special Area, completion of an agreement with the State and ASRC to nominate a BCA, and/or Congressional designation of the Colville River as part of the WSR System, the BLM would conduct the associated plans and studies as described for Alternative B.

**5. Alternative D:** Alternative D would make 90 percent of the planning area (73% of the area of high oil and gas potential) available for oil and gas leasing (Fig. II.C.1-4). The Goose Molting Habitat LUEA would not be made available. The Kuukpiuk Corporation Entitlement LUEA would be available for oil and gas leasing, and all appropriate sale and leasing revenues due ASRC would be put in escrow. Aboveground pipelines could cross all lands within the planning area, and all lands would be available for seismic studies. Important waterfowl habitat remains unavailable for oil and gas leasing. Certain stipulations in Section II.C.7 have been developed to protect caribou in the part of the Teshekpuk Lake Caribou Habitat LUEA available for oil and gas leasing. Other protective measures include applying other relevant stipulations in Section II.C.7, recommending a portion of the Colville be included as a recreational river in the WSR System, proposing a BCA along the Colville River, designating the Ikpiukuk Paleontological Sites LUEA as a new Special Area to protect paleontological resources, and adding the Pik Dunes LUEA to the Teshekpuk Lake Special Area. Upon Secretarial designation of the Ikpiukuk Paleontological Sites LUEA as a Special Area, completion of an agreement with the State and ASRC to nominate a BCA, and/or Congressional designation of the Colville River as part of the WSR System, the BLM would conduct the associated studies and plans as described for Alternative B. In addition, the agency would conduct an interagency wildlife management plan focusing on caribou and waterbird populations within the Teshekpuk Lake Caribou Habitat and the Goose Molting LUEA's. This plan would guide inventory, monitoring, and behavioral studies both by Federal, State, and NSB agencies and, in the case of caribou, by oil and gas lessees.

**6. Alternative E:** Alternative E makes all BLM-administered lands in the planning area available to oil and gas leasing (Fig. II.C.1-5). The Kuukpiuk Corporation

Entitlement LUEA would be available for oil and gas leasing, and all appropriate sale and leasing revenues due ASRC would be put in escrow. Aboveground pipelines could cross all lands within the planning area, and all lands would be available for seismic studies. Certain stipulations in Section II.C.7 have been developed especially to protect caribou in the Teshekpuk Lake Caribou Habitat LUEA and others protect waterfowl in the Goose Molting Habitat LUEA. Other protective measures include applying other relevant stipulations in Section II.C.7, proposing a BCA along the Colville River, designating the Ikpiukuk Paleontological Sites LUEA as a new Special Area to protect paleontological resources, and adding the Pik Dunes LUEA to the Teshekpuk Lake Special Area. The BLM would conduct the plans and studies of the Ikpiukuk Paleontological Sites LUEA, the BCA, and the caribou and waterfowl of the Teshekpuk Lake Caribou Habitat and the Goose Molting LUEA's and would conduct them under the same circumstances and for the same purposes as in Alternative D.

Figure II.C.1

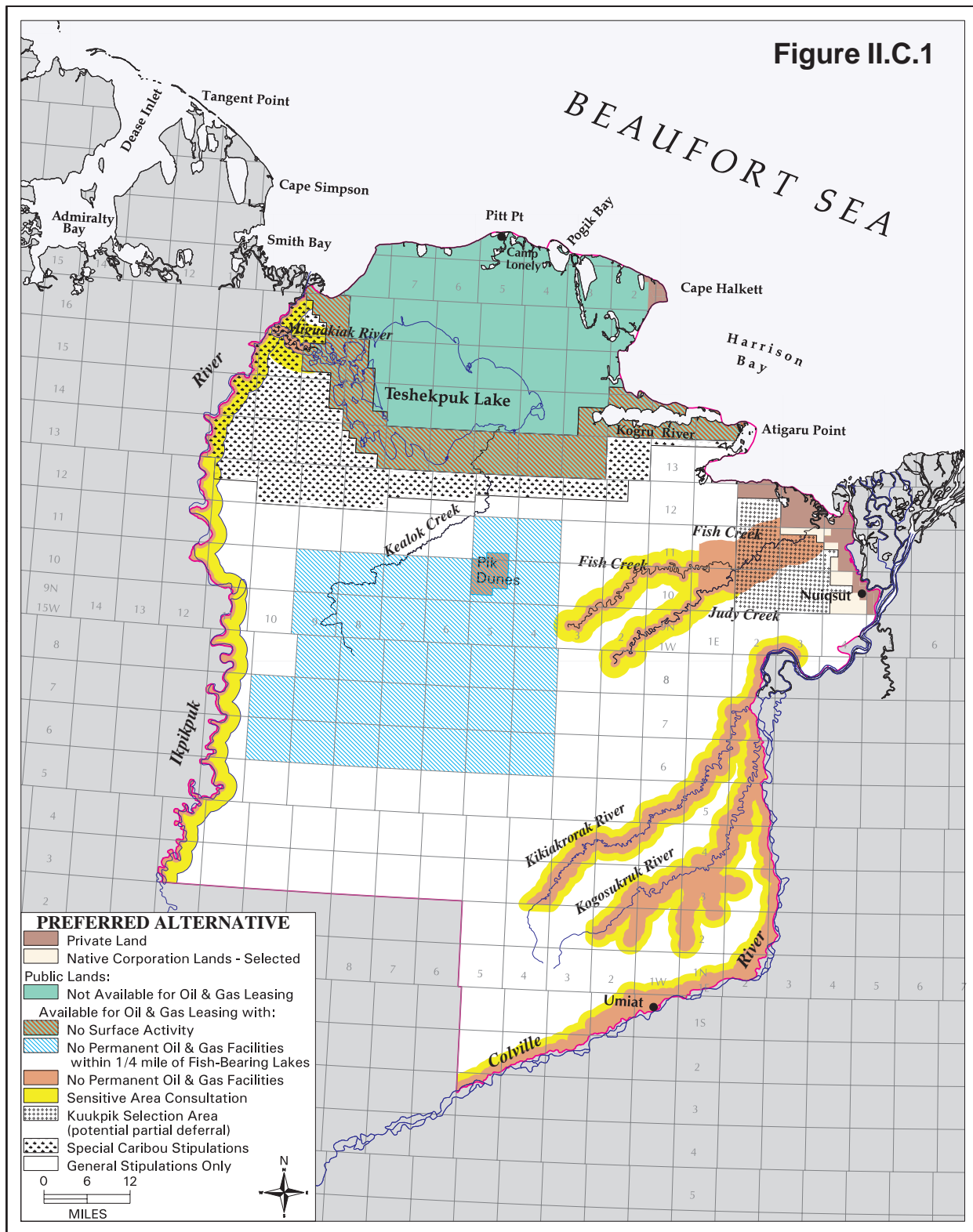


Figure II.C.2

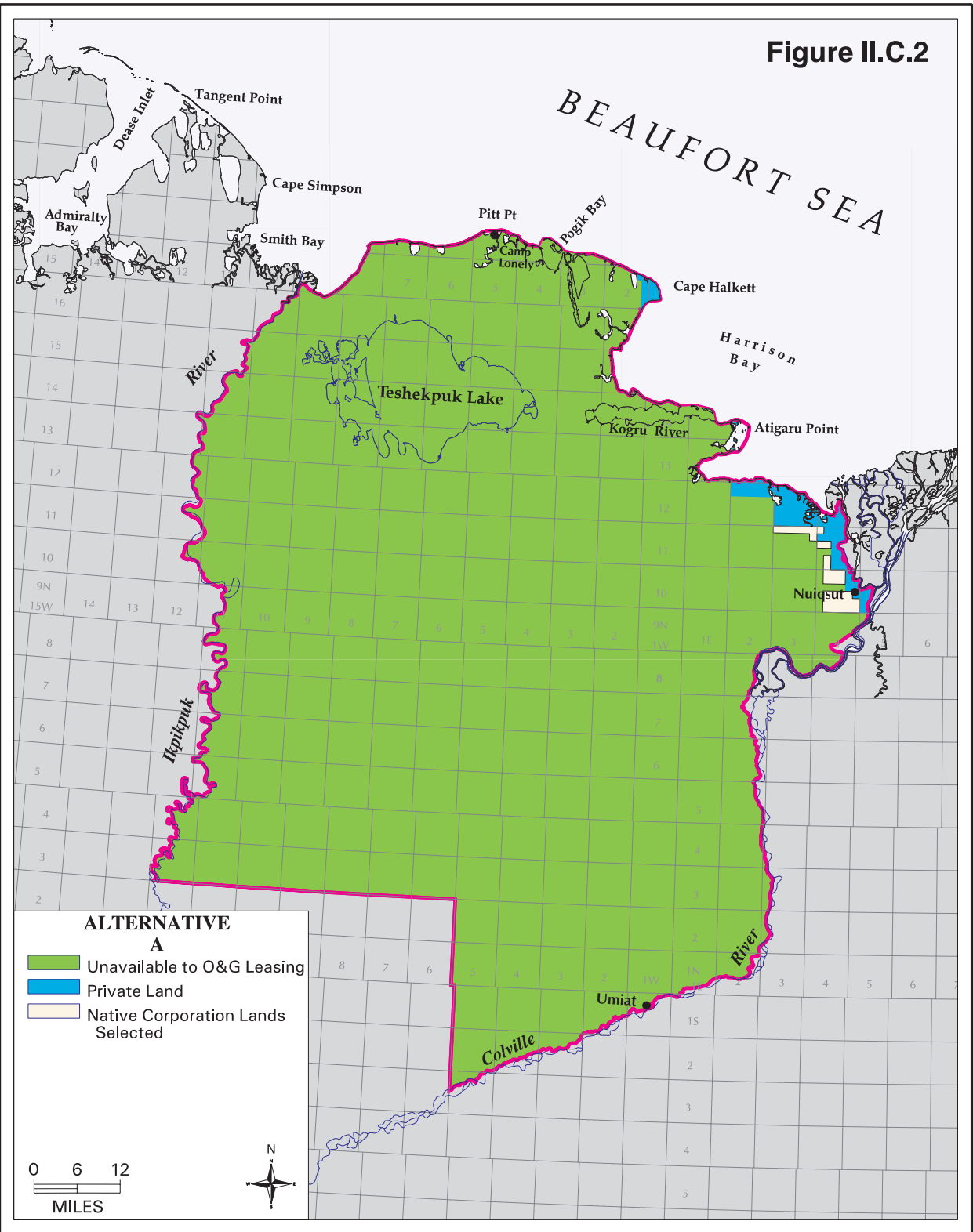


Figure II.C.3

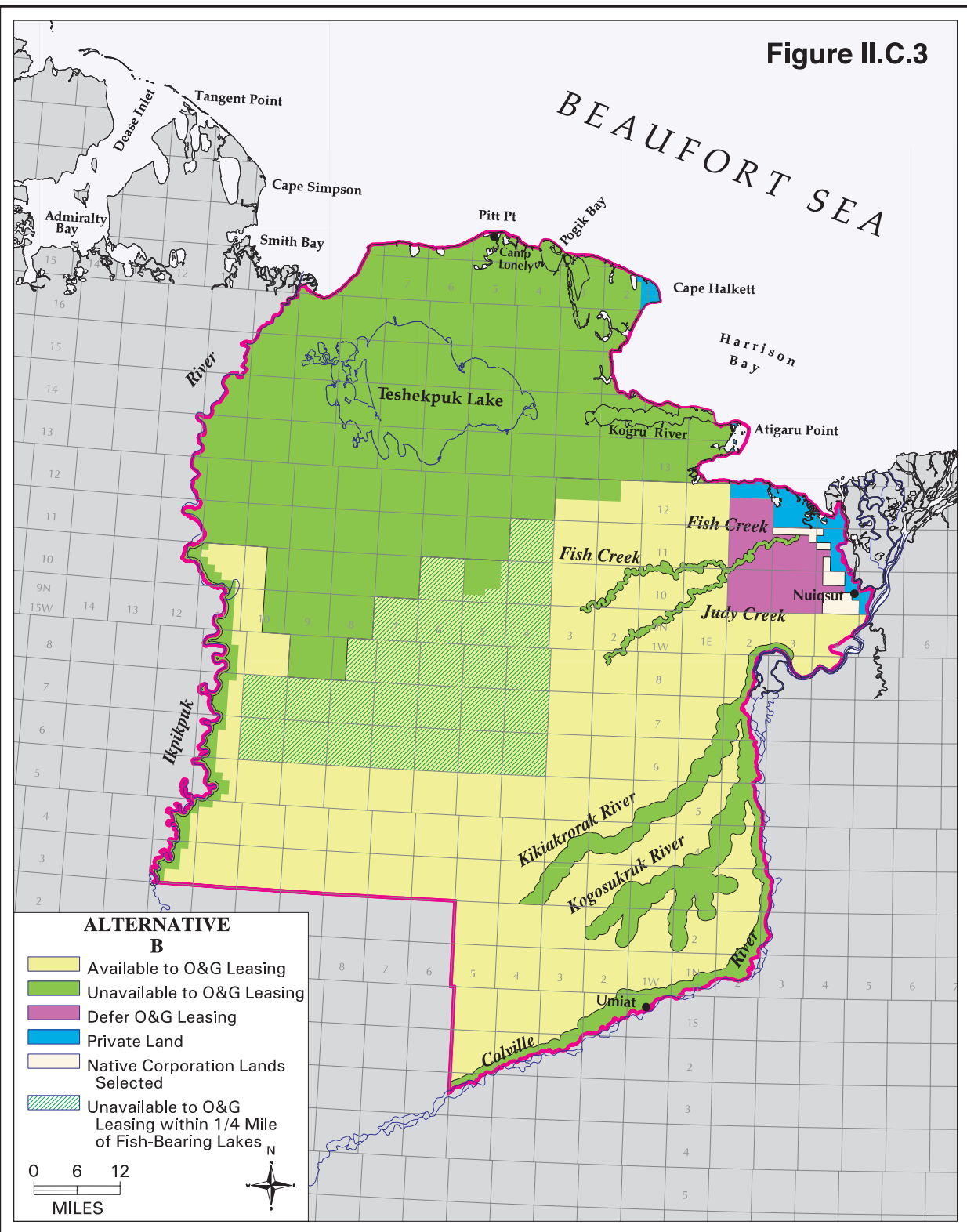


Figure II.C.4

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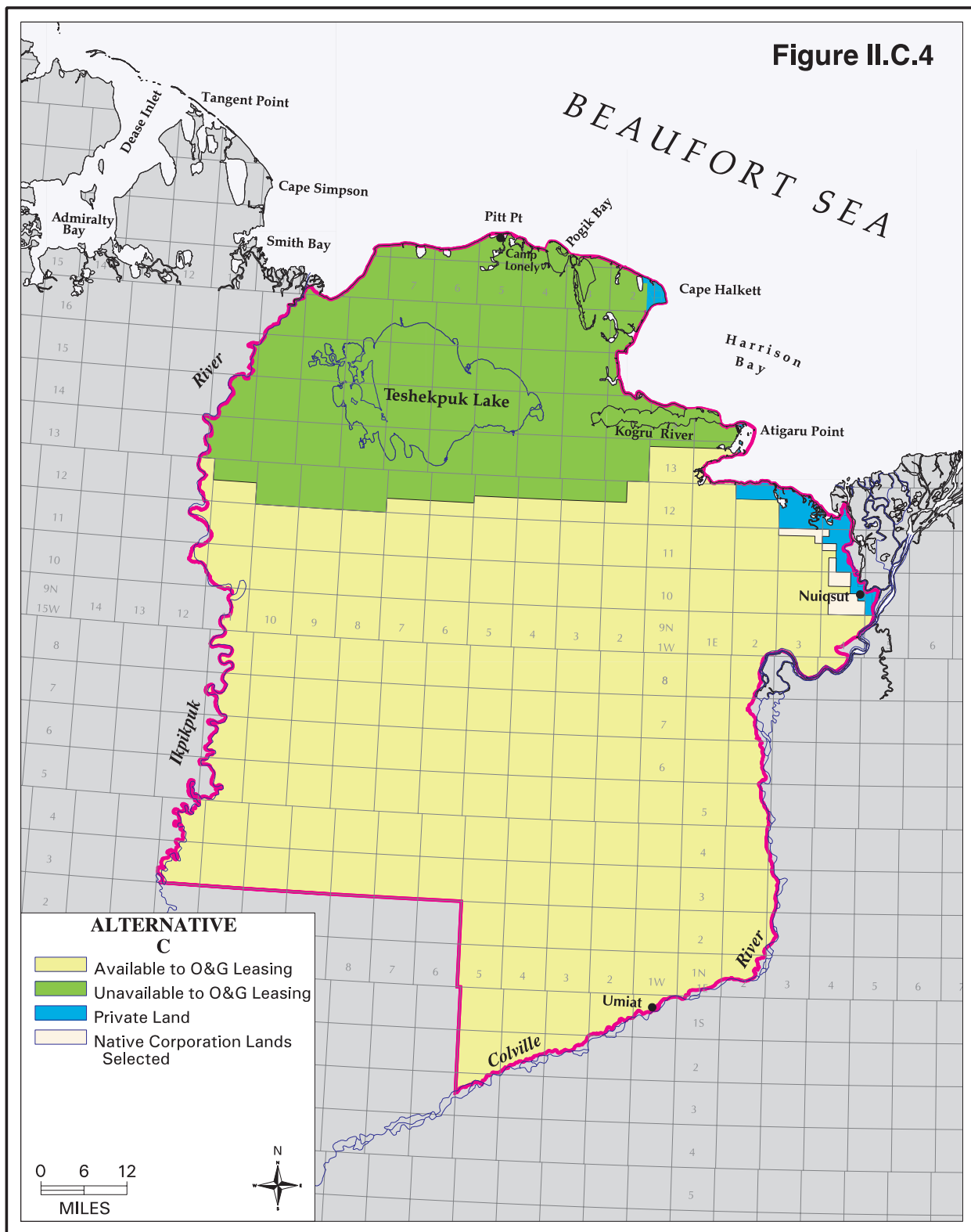


Figure II.C.5

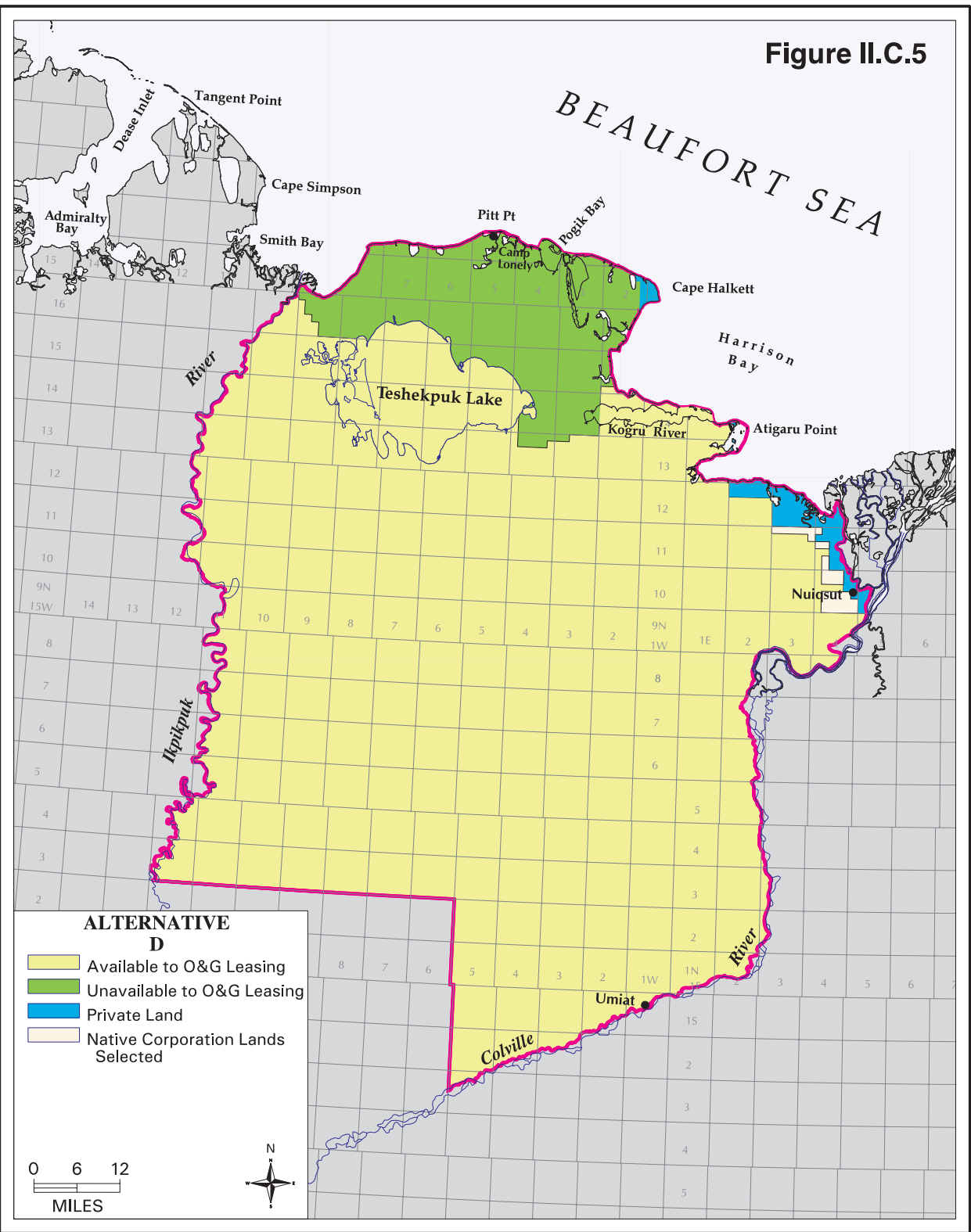
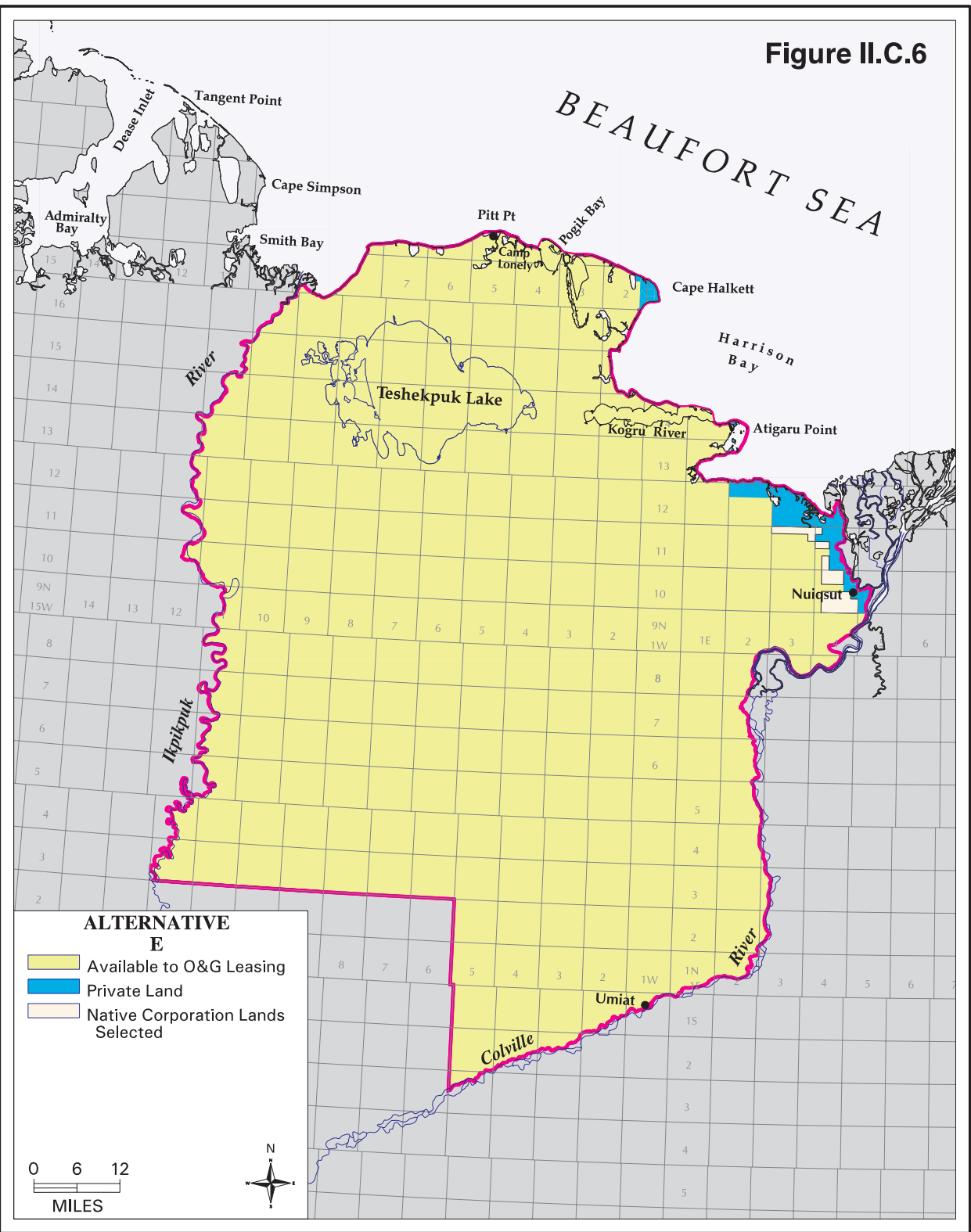


Figure II.C.6



**7. Stipulations:** The following definitions apply to stipulations described in Sections II.7.a and b:

**Active Floodplain:** The lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum that area subject to a 1 percent or greater chance of flooding in any given year (also referred to as the 100-year or base floodplain).

**Body of Water or Waterbody:** A lake, river, stream, creek, or pond that holds water throughout the summer and supports a minimum of aquatic life.

**Permanent oil and gas facilities:** Production facilities, pipelines, roads, airstrips, production pads, docks and other bottom-founded structures, seawater-treatment plants, and any other structure associated with an oil and gas operation that occupies land for more than one winter season. It does not include material sites or seasonal facilities such as ice roads and ice pads.

**a. Preferred Alternative:** The following stipulations are part of the Preferred Alternative discussed in Section II.C.1 above. They are based on existing policies and laws, and on knowledge of the resources present in the planning area, and current industry practices. All stipulations will attach to all activities, including oil and gas leases issued in the planning area. All oil and gas activity permits issued subsequent to leasing shall comply with the appropriate lease stipulations specific to the activity under review. All permits issued in conjunction with other authorized activities (e.g., seismic operation, commercial guiding) within the planning area shall comply with the appropriate stipulations specific to the activity under review.

Additional site-specific stipulations may be added by the Authorized Officer (AO) as determined necessary by further NEPA analysis and as developed through consultation with other Federal, State, and NSB regulatory and resource agencies. Other Federal, State, and NSB permits (e.g., NPDES, Clean Water Act [CWA] Section 404) also may be required by law or regulation for an oil and gas project to proceed. A list of permits/approvals commonly required in conjunction with an oil and gas exploration and development project is provided in Table II.F.1. Additional permits not listed in Table II.F.1 may be required. Specific State permits are required when the State has primary authority, under Federal or State law or regulation, for enforcement of the provision in question. Specific permits issued by Federal agencies other than BLM could include permit conditions that are more stringent than those presented below.

**Exception Clause:** In the event that an exception to a lease or permit stipulation is requested and before an exception may be granted, the AO shall find that implementation of the stipulation is:

1. a) technically not feasible or  
b) economically prohibitive or  
c) an environmentally preferable alternative is available, and
2. the alternative means proposed by the lessee fully satisfies the objective(s) of the stipulation.

In addition, prior to the consideration or granting of an exception to a lease or permit, all conditions and/or consultation requirements specific to a stipulation must be met. The AO shall consult with appropriate Federal, State, and NSB regulatory and resource agencies before an exception may be granted, except in the case of an emergency. The AO's power to grant stipulation exceptions is limited to those subjects, uses, and permits over which the BLM has authority. Exceptions may be granted in emergencies involving human health and safety.

#### **Waste Prevention, Handling, and Disposal and Spills:**

1. To prevent and minimize present and future pollution, management decisions affecting waste generation shall be addressed in the following order of priority:

- Prevention and Reduction
- Recycling
- Treatment
- Disposal

- a. Lessees shall prepare a waste-management plan approved by the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, to achieve specific waste-reduction and prevention goals for all phases of exploration and development (including activities conducted by contractors). The plan shall identify all waste streams that will be produced during each operation by type, volume, and toxicity and the method of disposal. For each waste stream, the lessee/operator shall describe what actions will be taken to minimize the volume. The plan should include activities that will integrate pollution prevention concepts into purchasing, inventory, shipping/receiving, operations maintenance, training, accounting, and design. The goal of the plan shall be continuous environmental improvement and achievement of reduction goals developed through the planning process.
- b. Lessees shall develop schedules for implementation and review to meet reduction and

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- prevention goals, designate accountable personnel to carry out action items, and specify budget line items for plan elements. Lessees shall provide the AO with an annual waste-management report.
- c. Lessees shall implement a hazardous-materials tracking system to ensure proper use, storage, and management of materials being used within industrial processes. The use of chlorinated solvents is prohibited.
  - d. Lessees shall conduct annual environmental compliance audits.
2. Attracting wildlife to food and garbage is prohibited. All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. A current list of approved precautions, specific to type of permitted use, can be obtained from the AO. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner to prevent the attraction of wildlife.
  3. Burial of garbage is prohibited. All putrescible waste shall be incinerated or composted through an AO-approved system, unless otherwise authorized by the AO. All solid waste, including incinerator ash, shall be removed from BLM lands and disposed of in an approved waste-disposal facility in accordance with U.S. Environmental Protection Agency (USEPA) and State of Alaska, Dept. of Environmental Conservation (ADEC) regulations and procedures. Burial of human waste is prohibited except as authorized by the AO.
  4. Except as specifically provided, all pumpable solid, liquid, and sludge waste shall be disposed of by injection in accordance with USEPA, ADEC, and the Alaska Oil and Gas Conservation Commission regulations and procedures. On-pad temporary muds and cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations.
  5. Wastewater disposal:
    - a. Unless authorized by the National Pollution Discharge Elimination System (NPDES) or State permit, disposal of domestic wastewater into bodies of freshwater, including wetlands, is prohibited.
    - b. Surface discharge of reserve-pit fluids is prohibited unless authorized by applicable NPDES, ADEC, and NSB permits and approved by the AO.
    - c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface-disposal techniques. The AO, in consultation with the ADEC and USEPA, may permit alternate disposal methods, if the lessee demonstrates that subsurface disposal is not feasible or prudent.
  - d. Discharge of produced waters into open or ice-covered marine waters less than 33 feet (10 meters) in depth is prohibited. The AO in consultation with ADEC and USEPA may approve discharges into waters greater than 33 feet (10 meters) in depth based on a case-by-case review of environmental factors and consistency with the conditions of a NPDES permit.
  - e. Alternate disposal methods will require an NPDES permit certified by the State.
6. Areas of operation shall be left clean of all debris.
  7. All spills shall be cleaned up immediately and to the satisfaction of the AO and all agencies with regulatory authority over spills, including the USEPA, ADEC, and the U.S. Coast Guard.
  8. Notice of any spill shall be given to the AO as soon as possible. Other Federal, State, and NSB entities shall be notified as required by law.
  9. For oil- and gas-related activities, a Hazardous-Materials Emergency-Contingency Plan shall be prepared and implemented prior to transportation, storage, or use of fuel. The plan shall include a set of procedures to ensure prompt response, notification, and cleanup in the event of a hazardous substance spill or threat of a release. Procedures applicable to fuel handling (associated with transportation vehicles) may consist of Best Management Practices approved by the AO. The plan shall include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials or companies), and names and phone numbers of Federal, State, and NSB contacts. Other Federal and State regulations may apply and require additional planning requirements. All staff shall be instructed regarding these procedures.
  10. Oil-spill-cleanup materials (absorbents, containment devices, etc.) shall be stored at all fueling points and vehicle-maintenance areas and be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment.
  11. Lessees shall provide refresher spill-response training to NSB and local community spill-response teams on a yearly basis.
  12. Lessees shall plan and conduct a major spill-response field-deployment drill annually.

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13. Prior to production and as required by law, lessees shall develop spill prevention and response contingency plans and participate in development and maintenance of the *North Slope Subarea Contingency Plan for Oil and Hazardous Substances Discharges/Releases* for the NPR-A operating area. Planning shall include development and funding of detailed (e.g., 1:26,000 scale) environmental sensitivity index maps for the lessee's operating area and areas outside the lessee's operating area that could be affected by their activities. (The specific area to be mapped shall be defined in the lease agreement and approved by the AO in consultation with appropriate resource agencies). Maps shall be completed in paper copy and geographic information system format in conformance with the latest version of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration's *Environmental Sensitivity Index Guidelines*. Draft and final products shall be peer reviewed and approved by the AO in consultation with appropriate Federal, State, and NSB resource and regulatory agencies.
  14. Except during overland moves and seismic operations (see Stipulation 24m), fuel, other petroleum products, and other liquid chemicals designated by the AO, whether in excess of 660 gallons in a single tank or in excess of 1,320 gallons in multiple containers, shall be stored within an impermeable lined and diked area capable of containing 110 percent of the stored volume. The liner material shall be compatible with the stored product and capable of remaining impermeable during typical weather extremes expected throughout the storage period. Permanent fueling stations shall be lined or have impermeable protection to prevent fuel migration to the environment due to overfills and spills. The storage area shall be located at least 500 feet from any waterbody with the exception of small caches (up to 210 gallons) for motor boats, float planes, and ski planes.
  15. Fuels shall not be stored on the active floodplain of any waterbody. Although fuels may be off-loaded from aircraft on ice, fuels shall not be stored on lake or river ice.
  16. Refueling of equipment within 500 feet of the highest high water mark of any waterbody is prohibited with the exception of refueling motor boats, float planes, and ski planes. (See Stipulation 24n for restrictions related to overland moves and seismic operations.)
  17. All fuel containers, including barrels and propane tanks, shall be marked with the responsible party's name, product type, and year filled or purchased.
- Ice Roads and Water Use:**
18. The location of winter ice roads shall be offset from year to year to minimize vegetative impacts. The offset shall be greater than or equal to the width of the road.
  19. Compaction of snow cover or snow removal from fish-bearing waterbodies shall be prohibited except at approved ice-road crossings.
  20. Water withdrawal from rivers and streams during winter is prohibited. Water withdrawal is prohibited during winter from lakes less than 7 feet (2.1 m) deep if they are interconnected with or subject to seasonal flooding by a fish-bearing stream. Water may be withdrawn from isolated lakes that are less than 7 feet (2.1 m) deep that lack connection to or are not subject to seasonal flooding by a fish-bearing stream. After consultation with the appropriate Federal, State, and NSB regulatory and resource agencies, the AO may authorize withdrawals from any lake less than 7 feet (2.1 meters) deep, if the proponent demonstrates that no fish exist in the lake.
- Generally, water withdrawal drawdown during winter from lakes 7 feet (2.1 meters) deep or deeper shall be limited to 15 percent of the estimated free-water volume (i.e., excluding the ice). After consultation with the appropriate Federal, State, and NSB regulatory and resource agencies, the AO may authorize drawdown exceeding 15 percent from a lake greater than 7 feet (2.1 meters) deep, if the proponent of the additional drawdown demonstrates that no fish exist in the lake. Operators are encouraged to use new ice-road and ice-pad construction methods, such as using aggregate "chips" shaved from frozen lakes, to decrease water demands, construction time, and impact on fisheries.
21. The AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, may allow water extraction from any lake used by molting geese, if it is determined that the withdrawal is consistent with Stipulation 20 and will not adversely affect identified goose-feeding habitat along lakeshore margins. An analysis/demonstration of the hydrologic functions of the lake(s) under review may be required of the lessee by the AO prior to approval of the withdrawal.
  22. Except for approved crossings, alteration of the banks of a waterway is prohibited. Waterways include natural features with sufficient water to create riparian (willow) habitat such as rivers, streams, deep and shallow lakes, tundra ponds, and shallow water tracks. Clearing of willows along the riparian zone is

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prohibited. Movement of equipment through willow stands shall be avoided whenever possible.

### Overland Moves and Seismic Work:

23. Seismic work is prohibited within 1,200 feet of any known, long-term cabin or campsite, identified by the AO, without the written permission of the AO.
  24. The following restrictions apply to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on unroaded surfaces during the winter season:
    - a. Because polar bears are known to den predominantly within 25 miles of the coast, operators shall consult with the Fish and Wildlife Service (FWS) prior to initiating activities in such habitat between October 30 and April 15. Activities are prohibited within 1 mile of known or observed polar bear dens; obtain locations from the FWS, (907) 786-3800. Operators are encouraged to apply for a letter of authorization from the FWS to conduct activities in polar bear denning areas.
    - b. Motorized ground-vehicle use will be minimized within the Colville River Raptor, Passerine, and Moose Area LUEA from April 15 through August 5, with the exception that use will be minimized in the vicinity of gyrfalcon nests beginning March 15. Such use will remain ½ mile away from known raptor-nesting sites, unless authorized by the AO. The BLM shall consult with FWS to plan travel routes to minimize disturbance to raptors.
    - c. Crossing of waterway courses shall be made using a low-angle approach to avoid disruption of the natural stream or lake bank. Except at approved crossings, operators are encouraged to travel a minimum of 100 feet from overwintering fish streams and lakes.
    - d. If snow ramps or snow bridges are used at water crossings for bank protection, the ramps and bridges shall be substantially free of soil and/or debris. Snow bridges shall be removed or breached immediately after use or before spring breakup.
    - e. To avoid additional freeze down of deep-water pools harboring overwintering fish, waterways shall be crossed at shallow riffles from point bar to point bar whenever possible.
    - f. On-the-ground activities shall use low-ground-pressure vehicles such as Rolligons, ARDCO, Trackmaster, Nodwell, or similar types of vehicles. A current list of approved vehicles can be obtained from the AO. Limited use of tractors equipped with wide tracks or “shoes” will be allowed to pull trailers.
    - g. Bulldozing of tundra, trails, or seismic lines is prohibited. This stipulation, however, does not prohibit the clearing of drifted snow along a trail, seismic line, or in a camp, to the extent that the tundra mat is not disturbed. Snow may be cleared from a waterbody ice surface to prepare an aircraft runway, if approved by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies.
    - h. To reduce the possibility of ruts, vehicles shall avoid using the same trails for multiple trips unless necessitated by serious safety or superseding environmental concern. This provision does not apply to ice roads (see Stipulation 18 above).
    - i. Ground operations are to begin only after the seasonal frost in the tundra and underlying mineral soils has reached a depth of 12 inches, and the average snow cover is 6 inches deep. The exact date shall be determined by the AO.
    - j. Ground operations shall cease when the spring melt of snow begins; approximately May 5 in the foothills area where elevations exceed 300 feet, and approximately May 15 in the northern coastal areas. The exact date will be determined by the AO.
    - k. Seismic activities and overland moves within the Goose Molting LUEA and the Teshekpuk Lake Caribou Habitat LUEA from May 1 through September 30 are prohibited. (Note that this overrides language in stipulation 24j.)
    - l. To prevent surface disturbance to tundra and other vegetation, tracked vehicles will not execute tight turns by locking one track.
    - m. Operators shall use best available technology (e.g., self-contained containment systems) or other appropriate spill containment measures, approved by the AO, to prevent fuel migration from fuel or chemical storage areas to the environment due to overfills and spills.
    - n. Refueling of equipment is prohibited within the active floodplain of any waterbody.
- ### Oil and Gas Exploratory Drilling:
25. From May 1 through September 30, exploratory drilling other than from production pads is prohibited in the Special Caribou Stipulations Area (Fig. II.C.1-1).
  26. Exploratory drilling is prohibited within 1,200 feet of any known, long-term cabin or campsite, identified by the AO, without written permission of the AO.

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27. Permanent oil and gas facilities including roads shall not be constructed during the exploration phase of oil and gas development.
28. Exploratory drilling in river, stream, and lake beds, as determined by the highest high water mark, is prohibited.

### Facility Design and Construction:

29. At least 3 years prior to approval of any development plan for leases within the Special Caribou Stipulations Area (see Fig. II.C.1-1), the lessee shall design and implement a study of caribou movement, including historical information regarding the distribution and range use of the Teshekpuk Lake Caribou Herd, as well as maps of caribou trails within the area. Study data may be gathered concurrent with approved seismic and exploration activity. The study design shall be approved by the AO in consultation with the Interagency Research and Monitoring Team. The study will include a minimum of 3 years of data to assist in providing the information necessary to determine facility design and location, including pipelines, that will be part of the development plan. Lessees may submit individual plans or they may combine with other lessees in the area to do a joint study. Total study funding by all lessees will not exceed \$500,000.
30. Causeways and docks are prohibited in river mouths or deltas. Artificial gravel islands and bottom-founded structures are prohibited in river mouths or active stream channels on river deltas, except as provided in the paragraphs below.

The BLM discourages the use of continuous-fill causeways. Environmentally preferred alternatives for field development include the use of onshore directional drilling, elevated structures, or buried pipelines. Approved causeways shall be designed, sited, and constructed to prevent significant changes to near shore oceanographic circulation patterns and water-quality characteristics (e.g., salinity, temperature, suspended sediments) that result in exceedences of water-quality criteria, and must maintain free passage of marine and anadromous fish.

Causeways, docks, artificial gravel islands, and bottom-founded structures may be permitted if the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, determines that a causeway or other structure is necessary for field development, and that no feasible and prudent alternative exists. A monitoring program may be required to address the objectives of water quality and

free passage of fish. Additional mitigation shall be required where significant deviation from these objectives occurs.

31. Permanent oil and gas surface occupancy, including oil and gas facilities, material sites, and exploration and delineation drilling facilities are prohibited in the leased area to the south, west, and east of Teshekpuk Lake, as depicted by the green hatched area in Fig. II.C.1-1. No exceptions will be granted to this stipulation.
32. Lessees shall use maximum economically feasible extended-reach drilling for production drilling to minimize the number of pads and the network of roads between pads. New developments shall share facilities with existing development when prudent and technically feasible. All oil and gas facilities, except airstrips, docks, and seawater-treatment plants, will be collocated with drill pads. If possible, airstrips will be integrated with roads. Given the paucity of gravel sites in the planning area and the cost of transporting gravel from outside the planning area, lessees are encouraged to implement gravel-reduction technologies e.g., insulated or pile-supported pads.
33. Within the Special Caribou Stipulations Area (see Fig. II.C.1-1), lessees shall orient linear corridors when laying out oil field developments to address migration and corralling effects and to avoid loops of road and/or pipeline that connect facilities.
34. Lessees shall separate elevated pipelines from roads by a minimum of 500 feet, if feasible. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipe and road converge on a drill pad.
35. To minimize delay or deflection of caribou movements, lessees shall place pipeline on the appropriate side of the road as determined by the AO (depending on general caribou movements in the area).
36. In the Special Caribou Stipulations Area (see Fig. II.C.1-1) and where facilities or terrain may funnel caribou movement, ramps over pipelines, buried pipe, or pipe buried under the road may be required by the AO after consultation with appropriate Federal, State, and NSB regulatory and resource agencies.
37. Aboveground pipelines shall be elevated at least 5 feet, as measured from the ground to the bottom of the pipe, except where the pipeline intersects a road, pad, or a ramp installed to facilitate wildlife passage and subsistence passage and access. The AO, in consultation with appropriate Federal, State, and NSB

## II. ALTERNATIVES

regulatory and resource agencies, may make an exception if no feasible and prudent means exists to meet the requirement.

38. All crude oil, produced water, seawater, and natural gas pipelines shall be constructed to accommodate the best available technology for detecting corrosion or mechanical defects during routine structural integrity inspections.
39. Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited within and adjacent to the waterbodies listed below at the distances identified to protect fish and raptor habitat, cultural and paleontological resources, and subsistence and other resource values. Setbacks include the bed of the waterbody and are measured from the bank highest high water mark.
  - a. **Ikpikpuk River:** a ½-mile setback from the bank of the Ikpiuk River within the planning area (fish, raptors, subsistence, cultural, and paleontological resources).
  - b. **Miguakiak River:** a ½-mile setback from each bank of the Miguakiak River (fish and subsistence resources).
  - c. **Teshekpuk Lake:** - a ½-mile setback from the bank and around the perimeter of Teshekpuk Lake (fish and subsistence resources).
  - d. **Fish Creek:** (1) a 3-mile setback from each bank of Fish Creek downstream from Section 31, T11N, R1E; (2) a ½-mile setback from each bank of Fish Creek in and upstream from Section 31, T11N, R1E (fish and subsistence resources).
  - e. **Judy Creek:** a ½-mile setback from each bank of Judy Creek extending from the mouth to the confluence of an unnamed tributary in Sec. 8, T8N., R.2W., Umiat Meridian (fish and subsistence resources).
  - f. **Colville River:** a 1-mile setback from the western bluff (or bank if there is no bluff) of the Colville River extending the length of the river as described in the Colville River Raptor, Passerine, and Moose LUEA. This restriction does not apply within 1½ mile of the Umiat airstrip (fish, raptor, passerine, moose, paleontological, subsistence, scenic, and recreational resources).
  - g. **Deep Water Lakes:** - a ¼-mile setback around the perimeter of any fish-bearing lake within or partially within the deep lake zone (see Fig. II.B.5) (fish resources). (If the fish-bearing status of the waterbody is unknown, the burden is on the lessee to demonstrate whether fish are present.)
  - h. **Kikiakrorak River:** a 1-mile setback from each bluff (or bank if there is no bluff) of the Kikiakrorak River (including the four tributaries

off the southern bank) downstream from T.2 N, R. 4 W., Umiat Meridian (raptor, passerine, and moose resources).

- i. **Kogosukruk River:** a 1-mile setback from each bluff (or bank if there is no bluff) of the Kogosukruk River downstream from T.2 N., R.3W., Umiat Meridian (raptor, passerine, and moose resources).

On a case-by-case basis, essential pipeline and road crossings will be permitted, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, through setback areas in those instances where no other suitable sites are available. Stream crossings will be sited perpendicular to the main channel flow; lake crossings will be at the narrowest point. Pipeline and road crossings are prohibited in the setback around Teshekpuk Lake. Road crossings are prohibited in the setback adjacent to the Colville River.

40. Gravel mining sites required for development activities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where feasible and prudent, gravel sites shall be designed and constructed to function as water reservoirs for future use. Gravel mine sites are prohibited within the active floodplain of a river, stream, or lake unless the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, determines that there is no feasible and prudent alternative or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

Mine site development and rehabilitation within a floodplain shall follow the procedures outlined in McLean (1993), North Slope Gravel Pit Performance Guidelines; State of Alaska, Dept. of Fish and Game (ADF&G) Habitat and Restoration Division Technical Report 93-9.

41. For those waterbodies not listed in Stipulation 39, permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited upon or within 500 feet as measured from the highest high water mark of the active floodplain. Essential pipeline and road crossings will be permitted on a case-by-case basis.
42. Bridges, rather than culverts, shall be used for road crossings on all major rivers, including those waterbodies listed in Stipulation 39 or identified by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, to reduce the potential of ice-jam flooding and erosion. When necessary on smaller streams, culverts shall be large

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enough to avoid restriction of fish passage or adversely affect natural stream flow.

43. The natural drainage pattern will be identified prior to and maintained during and after construction. All permanent structures constructed adjacent to a body of water, such as approved road and pipeline crossings, shall be sited and designed to limit erosion from flooding and wave action (e.g., through use of slope-protection measures). Cross-drainage structures will be sited, maintained, and properly abandoned to prevent impoundments or alteration of local or areawide hydrology. Gravel structures shall be designed and sited to minimize the length that is perpendicular to sheet flow.
44. Dewatering during construction shall be conducted using Best Management Practices (BMP's). A current list of BMP's will be available from the AO. Examples include the use of splash plates, dewatering points, natural filtration through vegetation, and dewatering during low-water period.
45. No surface structures, except essential transportation crossings, are allowed within the Pik Dunes LUEA.
46. Lessees shall minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region. Lessees shall identify on a map or aerial photograph the largest surface area, including future expansion areas, within which a facility is to be sited or an activity is to occur. The AO will consult with Federal, State, and NSB regulatory and resource agencies to identify key wetlands and work with lessees during the development of operating plans. To minimize impact, the lessee shall avoid siting facilities in the identified wetlands, unless no feasible and prudent alternative exists. Key wetland types include but are not limited to fish-bearing lakes and streams, riparian shrub, and the following classes described by Bergman et al. (1977): shallow and deep-*Arctophila* ponds, deep-open lakes, basin-complex wetlands, and coastal wetlands.
47. Permanent oil and gas facilities are prohibited within 1 mile of known long-term cabins or long-term campsites, identified by the AO, except that pipelines and roads are allowed up to ¼ mile from such cabins or campsites.
48. Permanent roads (i.e., gravel, sand) connecting to a road system outside the planning area are prohibited. Permanent roads necessary to connect pads within independent, remote oil fields are allowed. Roads

connecting production sites between separate oil fields may be considered if road-connected operations are environmentally preferable to independent, consolidated operations that each include airstrip, housing, production, and support facilities.

### Ground Transportation:

49. The following ground-traffic restrictions apply to permanent roads (as authorized in Stipulation 48 above) in the Special Caribou Stipulations Area (Fig. II.C.1-1):
  - a. From May 20 through June 20:
    - (1) Traffic speed will not exceed 15 miles per hour.
    - (2) Traffic will be minimized (a reasonable target would be four convoy round-trips per day between facilities). Nonessential operations requiring vehicles shall be suspended during this time period.
  - b. From May 20 through August 1:
    - (1) Caribou movement will be monitored.
    - (2) Based on this monitoring, traffic will cease when a crossing by 10 or more caribou appears to be imminent.
  - c. From May 20 through August 20:
    - (1) Convoying will be used to minimize the number of disturbances due to road traffic.
    - (2) Personnel will be bussed between work sites and other facilities to minimize the number of vehicles on the road.
50. Major stockpiling of equipment, materials, and supplies for oil and gas activities in the Special Caribou Stipulations Area (see Fig. II.C.1-1) shall occur prior to or after the period May 20 through June 20 to minimize road traffic during that period.
51. Chasing wildlife with ground vehicles is prohibited.

### Air Traffic:

(Note: The BLM's authority to restrict air traffic is limited to those activities associated with use authorization on BLM-administered lands.)

52. Use of aircraft larger than a Twin Otter for authorized activities in the planning area, including oil and gas activities, from May 20 through August 20 within the Teshekpuk Lake Caribou LUEA (see Fig. II.B.4) is prohibited, except in cases of emergency.

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53. Helicopter overflights for BLM-permitted activities shall be suspended in the Goose Molting LUEA (see Fig. II.B.2) from June 15 through August 20.
54. Fixed-wing aircraft traffic takeoffs and landing for BLM-permitted activities in the planning area shall be limited to an average of one round-trip flight a day from May 20 through June 20 at aircraft facilities in the Teshekpuk Lake Caribou Habitat LUEA (see Fig. II.B.4). Within the Goose Molting LUEA (see Fig. II.B.2), fixed-wing aircraft use for such activities shall be restricted from June 15 to August 20 to flight corridors and frequencies established by BLM in consultation with the appropriate Federal, State, and NSB regulatory and resource agencies.
55. Aircraft shall maintain an altitude of at least 1,000 feet above ground level (AGL) (except for takeoffs and landings) over caribou winter ranges from October 1 through May 15 and 2,000 feet AGL over the Teshekpuk Lake Caribou Habitat LUEA (see Fig. II.B.4) from May 16 through July 31, unless doing so would endanger human life or violate safe flying practices.
56. Aircraft shall maintain an altitude of at least 1,500 feet AGL when within ½ mile of cliffs identified as raptor nesting sites from April 15 through August 5, unless doing so would endanger human life or violate safe flying practices. Aircraft shall maintain an altitude of 1,500 feet AGL when within ½ mile of known gyrfalcon nest sites from March 15 to April 15. Permittees shall obtain information from BLM necessary to plan flight routes near gyrfalcon nests.
57. Hazing of wildlife by aircraft is prohibited.

### **Oil Field Abandonment:**

58. Upon field abandonment or expiration of a lease or oil- and gas-related permit, all facilities shall be removed and sites rehabilitated to the satisfaction of the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies. The AO may determine that it is in the best interest of the public to retain some or all of the facilities. Lessees shall comply with all exploration and development bonding required by law and regulation (43 CFR 3154.1 and 3134.1). No exceptions shall be granted to this provision.

### **Subsistence:**

59. During exploration, development, and production, the lessee shall develop and implement a plan, approved by the AO in consultation with the Interagency

Research and Monitoring Team and the Subsistence Advisory Panel, to monitor the effects of activities on subsistence. The lessee shall provide biannual reports to BLM, the Interagency Research and Monitoring Team, and the Subsistence Advisory Panel.

60. Lessees shall not unreasonably restrict access by subsistence users in oil field development areas.
  - a. Lessees shall establish procedures for entrance to facilities, the use of roads, and firearms discharge. These procedures shall be developed in consultation with affected local communities, NSB, and the Subsistence Advisory Panel and be approved by the AO. In cases where the lessee and the Panel disagree, the AO will determine the appropriate procedure.
  - b. Lessees shall develop and distribute information about how to conduct subsistence activities in development areas safely (so equipment is not damaged and people are not endangered) to the communities through public meetings, newsletters, radio, and signs in both English and Inupiaq.
61. Exploration and development and production operations shall be conducted in a manner that prevents unreasonable conflicts between the oil and gas industry and subsistence activities.

Prior to submitting an exploration plan or development and production plan (including associated oil-spill contingency plans) to the BLM, the lessee shall consult with potentially affected subsistence communities (e.g., Barrow, Nuiqsut, Atkasuk, or Anaktuvuk Pass), NSB, and the Subsistence Advisory Panel to discuss potential conflicts with the siting, timing, and methods of proposed operations and safeguards or mitigating measures that could be implemented by the operator to prevent unreasonable conflicts. Through this consultation, the lessee shall make every reasonable effort, including such mechanisms as a conflict avoidance agreement, to ensure that exploration, development, and production activities are compatible with subsistence hunting, fishing, and other subsistence activities and will not result in unreasonable interference with subsistence harvests.

A discussion of resolutions reached during this consultation process, specific conflict avoidance agreement(s), and plans for continued consultation shall be included in the exploration plan or the development and production plan. In particular, the lessee shall show in the plan how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. Lessees also shall

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include a discussion of multiple or simultaneous operations, such as exploration and delineation well drilling and seismic activities, that can be expected to occur during operations to more accurately assess the potential for any cumulative effects. Communities, individuals, and other entities who were involved in the consultation shall be identified in the plan. The AO shall send a copy of the exploration plan or development and production plan (including associated oil-spill-contingency plans) to the potentially affected communities, the NSB, and the Subsistence Advisory Panel at the time they are submitted to the BLM to allow concurrent review and comment as part of the plan approval process.

In the event no agreement is reached between the parties, the AO shall consult with representatives from the subsistence communities, Subsistence Advisory Panel, NSB, and the lessee(s) to specifically address the conflict and attempt to resolve the issues before making a final determination on the adequacy of the measures taken to prevent unreasonable conflicts with subsistence harvests.

The lessee shall notify the AO of all concerns expressed by subsistence users during operations and of steps taken to address such concerns. Lease-related use will be restricted, when the AO determines it is necessary to prevent unreasonable conflicts with local subsistence hunting, fishing, and other subsistence activities.

In enforcing this stipulation, the AO will work with other agencies and the public to assure that potential conflicts are identified and efforts are taken to avoid these conflicts, e.g., planning seismic operations to avoid traditional land use sites and allotments. These efforts may include seasonal drilling restrictions, seismic restrictions, and directional drilling requirements or use of other technologies deemed appropriate by the AO.

62. The following subsistence, wildlife habitat, and traditional/cultural land use areas are of significant concern to local communities and will be given special consideration during the consultation process outlined in Stipulation 61:
  - a. **Long-term cabins and campsites:** a 2-mile zone around the cabins and campsites.
  - b. **Ikpikpuk River:** a 2-mile zone from the east bank of the river.
  - c. **Miguakiak River:** a 3-mile zone from each bank of the river.
  - d. **Fish Creek:** (1) a 3-mile zone from each bank downstream from Sec. 31. T11N, R1E; (2) a 2-

mile zone from each bank in and upstream from Section 31, T11N, R1E.

- e. **Judy Creek:** a 2-mile zone from each bank of the creek.
- f. **Kogosukruk River:** a 2-mile zone from each bluff (or bank if there is no bluff) of the river downstream from T. 2 N., R. 3 W., Umiat Meridian.
- g. **Kikiakrorak River:** a 2-mile zone from each bluff (or bank if there is no bluff) of the river (including the four tributaries off the southern bank) downstream from T.2 N, R. 4 W., Umiat Meridian.
- h. **Colville River:** a 2-mile zone from the west bluff (or bank if there is no bluff) extending the length of river in the Colville River Raptor, Passerine, and Moose LUEA.

### Orientation Program:

63. The lessee shall include in any application for permit to drill a proposed orientation program for all personnel involved in exploration or development and production activities (including personnel of lessee's agents, contractors, and subcontractors) for review and approval by the AO. The program shall be designed in sufficient detail to inform individuals working on the project of specific types of environmental, social, and cultural concerns that relate to the planning area. The program shall address the importance of not disturbing archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals and provide guidance on how to avoid disturbance. Guidance shall include the production and distribution of information cards on endangered and/or threatened species in the planning area. The program shall be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel will be operating. The orientation program shall also include information concerning avoidance of conflicts with subsistence, commercial fishing activities, and pertinent mitigation.

The program shall be attended at least once a year by all personnel involved in on-site exploration or development and production activities (including personnel of lessee's agents, contractors, and subcontractors) and all supervisory and managerial personnel involved in lease activities of the lessee and its agents, contractors, and subcontractors. Individual training is transferable from one facility to another except for elements of the training specific to a particular site.

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Lessees shall maintain a record onsite of all personnel who attend the program for so long as the site is active, though not to exceed the 5 most recent years of operations. This record shall include the name and date(s) of attendance of each attendee.

### Traditional Land Use Sites:

64. Lessees shall conduct an inventory of known traditional land use sites prior to any field activity. This inventory will be compiled from sites listed in the most current Traditional Land Use Inventory available from the NSB's Inupiat History, Language, and Cultural Commission, and shall be approved by the AO. Based on this inventory, the lessee shall develop a plan to avoid these sites and mitigate any potential damage that could result from field activities. The plan shall indicate how access to the site by local subsistence users will be provided. Lessees shall submit copies of the plan to BLM and the Subsistence Advisory Panel with any application for permit to drill.

### Other Activities:

65. It is the responsibility of the authorized user to ensure that all individuals brought to the planning area under its auspices adhere to these stipulations. Authorized users of the planning area shall provide all employees, contractors, subcontractors, and clients with a briefing regarding stipulations applicable to the lease and/or permit. A copy of applicable stipulations will be posted in a conspicuous place in each work site and campsite.
66. The authorized user shall protect all survey monuments and be responsible for survey costs if remonumentation is required as a result of the user's actions.
67. All activities shall be conducted to avoid or minimize disturbance to vegetation.
68. The BLM, through the AO, reserves the right to impose closure of any area to operators in periods when fire danger or other dangers to natural resources are severe.
69. The authorized user shall be financially responsible for any damage done by a wildfire caused by its operations.
70. Construction camps are prohibited on frozen lakes and river ice. Siting of construction camps on river sand and gravel bars is allowed and, where feasible, encouraged. Where leveling of trailers or modules is required and the surface has a vegetative mat, leveling shall be accomplished through blocking rather than use of a bulldozer.
71. Use of pesticides without the specific authority of the AO is prohibited.
72. The feeding of wildlife by authorized users is prohibited.
73. Hunting and trapping by lessee's employees, agents, and contractors are prohibited when persons are on "work status." Work status is defined as the period during which an individual is under the control and supervision of an employer. Work status is terminated when the individual's shift ends and he/she returns to a public airport (e.g., Fairbanks, Barrow, Nuiqsut, or Deadhorse). Use of lessee facilities, equipment, or transport for personnel access or aid in hunting and trapping is prohibited.
74. Lessees shall conduct a cultural and paleontological resources survey prior to any ground-disturbing activity. Upon finding any potential cultural or paleontological resource, the lessee or their designated representative shall notify the AO and suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the AO.
75. Petroleum exploration and production activities are prohibited within ½ mile of occupied grizzly bear dens, identified by the ADF&G, unless alternative mitigation measures are approved by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies.
76. Oil and gas lessees and their contractors and subcontractors will prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to: (a) minimize attraction of bears to the drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on drill sites and identify proper procedures to be followed; (d) if authorized, deter bears from the drill site; (e) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The lessee's shall develop educational programs and camp layout and management plans as they prepare their lease operations plans. These plans shall be developed in consultation with appropriate Federal, State, and NSB

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regulatory and resource agencies and submitted to the AO.

77. Operators are encouraged to apply for a letter of authorization from the FWS to conduct activities in polar bear denning areas.
78. Permanent structures, other than oil and gas facilities, are prohibited within 100 feet of the highest high water mark of the nearest body of water.
79. Lessees shall use smokeless flares for handling routine conditions and use auxiliary smokeless flares for planned events that exceed the capacity of routine flares. Lessees shall use flares that meet the Federal New Source Performance design standards listed in 40 CFR 60.18.

**b. Alternatives A through E:** The following stipulations are part of the action Alternatives B through E and, to a limited extent, are part of the no-action Alternative A, discussed above. They are based on existing policies and laws, knowledge of the resources present in the planning area, and current industry practices. Many of the stipulations listed below apply to activities other than oil and gas exploration and development and historically have been applied through BLM's various permitting authorities. To the extent these stipulations historically have been applied, they are applicable to Alternative A. The total stipulations package applies to the action Alternatives B through E. The stipulations could evolve over time. Future changes to the stipulations would be preceded by the appropriate level of National Environmental Policy Act (NEPA) analysis. Some stipulations apply only to the alternatives that are indicated in brackets. Those marked with an asterisk (\*) would be incorporated as conditions of oil and gas lease sales for applicable lease tracts; those without an asterisk would be attached to applicable individual permits. If the BLM determines that additional stipulations are necessary during further NEPA analysis for any oil and gas activities (e.g., exploration and development activities) beyond those proposed by some of the alternatives presented above, BLM will include them in the appropriate future NEPA document for each such activity.

The management restrictions (stipulations) listed below may be modified or waived for specific authorizations and leases by the BLM Authorized Officer (AO) in the following instances:

- a. if, and to the extent, the management restrictions listed below state that they permit such modifications;
- b. if the restriction is not applicable for the activity or area for which the authorization is sought, e.g.,

restrictions specific to oil field development would not apply to Special Recreation Permits and restrictions applicable specifically to the Colville River area would not be applicable to authorizations for activities in other parts of the planning area;

- c. if the proponent of an activity demonstrates to the satisfaction of the AO, in consultation with the appropriate Federal, State, and NSB agencies, that a modification or waiver is environmentally preferable;
- d. if the lessee can demonstrate that the restriction(s) would make production technically infeasible or economically prohibitive and can demonstrate that the objectives of the stipulation can be accomplished through alternative means under Alternative D, the AO, after consulting with the appropriate Federal, State, and NSB agencies, may modify the restriction(s) in or allow exception(s) to stipulations that apply only within the Teshekpuk Lake Caribou Habitat LUEA in the case of oil and gas activities;
- e. if the lessee can demonstrate that the restriction(s) would make production technically infeasible or economically prohibitive and can demonstrate that the objectives of the stipulation can be accomplished through alternative means under Alternative E, the AO, in consultation with representatives of the appropriate Federal, State, and NSB agencies, may modify the restriction(s) in or allow exception(s) to stipulations that apply only within the Teshekpuk Lake Caribou Habitat LUEA or the Goose Molting Habitat LUEA in the case of oil and gas activities.

Modifications or waivers may be granted in emergencies involving human health and safety. Modifications and waivers shall not relieve the proponent from restrictions imposed by other applicable Federal, State, or NSB law or regulation. Additional site-specific stipulations may result from subsequent site- or authorization-specific environmental analyses.

### **Solid- and Liquid-Waste Handling, Hazardous-Material Disposal and Cleanup:**

1. All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. Larger undertakings (those involving more than 15 persons) shall have a written procedure to ensure that the handling and disposal of putrescible waste shall be accomplished in a manner to prevent the attraction of wildlife
2. All solids and sludges shall be incinerated or disposed of by injection, in accordance with U.S. Environmental

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Protection Agency (USEPA), State of Alaska Department of Environmental Conservation (ADEC), and the Occupational Safety and Health Act (OSHA) regulations and procedures.

3. All solid wastes shall be removed from BLM lands to ADEC-approved waste-disposal facilities. Solid-waste combustibles may be incinerated. All noncombustible solid waste, including ash from incineration and fuel drums, shall be removed for approved disposal. There will be no burial of garbage or human wastes.
4. Areas of operation shall be left clean of all debris.
5. All battery, hydrocarbon, and hazardous-material spills, including spills of seawater used for oil field waterflood, shall be cleaned up immediately and completely, and all contaminated or treated products removed in accordance with USEPA, ADEC, and OSHA regulations and procedures.
6. As soon as possible, but not later than 24 hours after any discharge, as defined in Alaska Statute Title 18, Chapter 75, Article 2, notice of such discharge shall be given to the AO and any other Federal and State officials as required by law.
7. For oil- and gas-related activities, a Hazardous-Materials Emergency-Contingency Plan shall be prepared and implemented prior to transportation, storage, or use of fuel. Staff shall be instructed in the procedures to follow. The plan shall include a set of procedures to ensure prompt response, notification, and cleanup should hazardous substances be spilled or if there is a threat of a release. This plan shall include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials or companies), and names and phone numbers of Federal, State, and NSB contacts.
8. Oil-spill-cleanup materials (absorbents, containment devices, etc.) shall be stored at all fueling points and vehicle-maintenance areas and be carried by field crews of all overland moves, seismic work trains, and similar overland moves by heavy equipment.
9. Fuel, other petroleum products, and/or other liquid chemicals designated by the AO, whether in excess of 660 gallons in a single tank or in excess of 1,320 gallons in multiple containers, shall be stored within an impermeable lined and diked area capable of containing 110 percent of the stored volume. The storage area shall be located at least 500 feet from any river, lake, or stream with the exception of small caches for motor boats and float planes. Material used as a liner must be capable of remaining impermeable during typical weather extremes expected throughout the storage period.
10. All fuel containers, including barrels and propane tanks, shall be marked with the responsible party's name, product type, and year filled or purchased.
11. Although fuels may be off-loaded from aircraft on ice, storage of fuels on lake or river ice or on active floodplains of any river or lake is prohibited.
12. Refueling of equipment within 500 feet of the water's edge of any lake or stream, with the exception of refueling motor boats, snowmachines, ski planes, and float planes, is prohibited.
13. To prevent and minimize present and future pollution, management decisions affecting waste generation shall be considered in the following order of priority:
  - Waste source reduction
  - Recycling of waste
  - Waste treatment
  - Waste disposal
  - a. Lessees shall develop and obtain approval from the AO, in consultation with USEPA and ADEC, of a waste-management plan for all exploration, construction, and production operations (including activities conducted by contractors). The plan shall identify all waste streams by type and volume that will be produced during each operation, as well as method of disposal. For each waste stream, the leases will describe what actions will be taken to minimize the volume.
  - b. Injection is the preferred method for disposal of muds and cuttings from oil and gas activities. Injection of nonhazardous oil field wastes generated during development is regulated by the Alaska Oil and Gas Conservation Commission, ADEC, and USEPA. Surface discharge of drilling muds and cuttings is allowed into reserve pits only when the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, determines that alternative disposal methods are not feasible and prudent. If use of a reserve pit is proposed, the operator shall demonstrate the advantages of a reserve pit over other disposal methods and describe methods to be employed to reduce the disposed volume. On-pad temporary cuttings storage shall be allowed as necessary to facilitate annular injection and/or back haul operations.
  - c. Wastewater disposal:
    - (1) Unless authorized by the National Pollution Discharge Elimination System (NPDES) or State permit, disposal of domestic wastewater

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into bodies of freshwater, including wetlands, is prohibited.

- (2) Surface discharge of reserve-pit fluids is prohibited unless authorized by NPDES, ADEC, and NSB permits and approved by the AO.
- (3) Subsurface disposal techniques shall be used to dispose of produced waters in upland areas, including wetlands. The AO, in consultation with ADEC and USEPA, may permit alternate disposal methods if the lessee demonstrates that subsurface disposal is not feasible or prudent.
- (4) Discharge of produced waters into open or ice-covered marine waters of less than 10 meters in depth is prohibited. The AO in consultation with ADEC may approve discharges into waters greater than 10 meters in depth based on a case-by-case review of environmental factors and consistent with the conditions of a NPDES permit.

### Ice Roads and Water Use:

14. The location of winter ice roads shall be offset from year to year to minimize vegetative impacts.
15. Compaction of snow cover or snow removal from fish-bearing waterbodies shall be prohibited except at approved ice-road crossings.
16. Water withdrawal from rivers and streams during winter is prohibited. Water withdrawal shall be prohibited during winter from lakes less than 7 feet deep, if they are interconnected with or subject to seasonal flooding by a fish-bearing stream. Water may be withdrawn from isolated lakes that are less than 7 feet deep that lack connection to or are not subject to seasonal flooding by a fish-bearing stream. The AO may authorize withdrawals from any lakes less than 7 feet deep, if the proponent demonstrates that no fish exist in the lake.  
  
Generally, water drawdown during winter from lakes greater than 7 feet deep shall be limited to 15 percent of the estimated free-water volume (i.e., excluding the ice). The AO may authorize drawdown exceeding 15 percent from a lake greater than 7 feet deep if the proponent of the additional drawdown demonstrates that no fish exist in the lake.
17. Within the Goose Molting Habitat LUEA (Fig. II.B.2), water extraction from any lake used by molting geese shall not alter hydrological conditions that could adversely affect identified goose-feeding habitat along lakeshore margins.
18. Except for approved crossings, alteration of the banks of a waterway is prohibited. Clearing of willows along the riparian zone is prohibited.

### Overland Moves and Seismic Work:

19. Seismic work is not allowed within 1,200 feet of any known, long-term cabin or campsite without the written permission of the AO.
20. The following restrictions apply to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on unroaded surfaces during the winter season:
  - a. Because polar bears are known to den predominantly within 25 miles of the coastline in the deeply drifted areas (6 feet or greater) adjacent to the high cut banks of drainages, seismic-program lines and overland moves should be aligned to avoid such areas by  $\frac{1}{4}$  mile, if feasible. The cutting or compaction of such drifted snow is prohibited within 25 miles of the Beaufort Sea. Activities are prohibited within 1 mile of known or observed polar bear dens; obtain locations from U.S. Department of the Interior, Fish and Wildlife Service, (907) 786-3800. Operators are encouraged to apply for a letter of authorization from FWS to conduct activities in polar bear denning areas.
  - b. Motorized ground-vehicle use shall be minimized within the Colville Raptor, Passerine, and Moose Area LUEA from April 15 through August 5. Such use will remain  $\frac{1}{2}$  mile away from known raptor nesting sites, unless authorized by the AO.
  - c. Travel up and down stream beds is prohibited to help avoid disturbance to riparian vegetation, stream-channel morphology, and resident fish populations.
  - d. Crossing of waterway courses shall be made using a low-angle approach in order to not disrupt the natural stream or lake bank.
  - e. If snow ramps or snow bridges are used at waterway crossings for bank protection, the ramps and bridges shall be substantially free of soil and/or debris. Snow bridges shall be removed or breached immediately after use or before spring breakup.
  - f. To avoid additional freezedown of deepwater pools harboring overwintering fish, waterways shall be crossed at shallow riffles from point bar to point bar whenever possible.
  - g. On-the-ground activities shall employ low-ground-pressure vehicles such as Rolligon, ARDCO, Trackmaster, Nodwell, or similar type. A current list of approved vehicles can be

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obtained from the AO. Limited use of tractors equipped with wide tracks or "shoes" will be allowed to pull trailers.

- h. Bulldozing of tundra, trails, or seismic lines is prohibited. This stipulation, however, does not prohibit the clearing of drifted snow along a trail, seismic line, or in a camp, to the extent that the tundra mat is not disturbed. Snow may be cleared from a lake or river ice surface to prepare an aircraft runway, if approved by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies. Vehicles shall avoid using the same tracks for multiple trips over the same trails, thereby reducing the possibility of ruts.
- j. Ground operations are to begin only after the seasonal frost in the tundra and underlying mineral soils has reached a depth of 12 inches, and the average snow cover is 6 inches deep.
- k. Ground operations will cease when the spring melt of snow begins; approximately May 5 in the foothills area where elevations exceed 300 feet, and approximately May 15 in the northern coastal areas. The exact date will be determined by the AO.
- l. No activity will occur within either the Goose Molting LUEA or the Teshekpuk Lake Caribou Habitat LUEA from May 1 through September 30. (Note that this overrides language in Stipulation 20k.)
- m. To prevent surface disturbance to tundra and other vegetation, tracked vehicles will not execute tight turns by locking one track.

### Oil and Gas Exploratory Drilling:

- 21. From May 1 through September 30, exploratory drilling other than from production pads is prohibited in the Goose Molting Habitat LUEA and the Teshekpuk Lake Caribou Habitat LUEA. [Alts. D-E]
- 22. Oil and gas exploration activities will avoid alteration (e.g., damage or disturbance to soils, vegetation or surface hydrology) of critical goose-feeding habitat types along lakeshore margins (grass/sedge/moss), as identified by the AO in consultation with FWS, within the Goose Molting Habitat LUEA. [Alt. E]
- 23. Exploratory drilling is prohibited within 1,200 feet of any known long-term cabin or campsite without the written permission of the AO.

### Facility Design and Construction:

- 24. At least 3 years prior to approval of any development plan for leases within the Teshekpuk Lake Caribou

Habitat LUEA, the lessee shall design and implement a study of caribou movement within the LUEA. The study design shall be approved by BLM in consultation with appropriate Federal, State, and NSB regulatory and resource agencies. The study shall include a minimum of 3 years of data that will provide the data necessary to determine facility design and location, including pipelines, that will be part of the development plan. Lessees may submit individual plans or they may combine with other lessees in the LUEA to do a joint study. Total study funding by all lessees will not exceed \$500,000. [Alts D-E]

- 25. Permanent oil and gas facilities (including gravel roads, pads, and airstrips but excluding pipelines) and material sites are prohibited within a 1,640-foot buffer zone surrounding all goose-molting lakes, and within a 3,280-foot buffer zone around all high-use lakes within the Goose Molting Habitat LUEA. Goose-molting lakes shall be identified by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies. (Currently known lakes are identified in Appendix E, Fig. E-6.) [Alt E;\*]
- 26. To protect crucial caribou movement corridors for insect relief within 2 miles of the Beaufort Sea coastline including inlets and the Kogru River east of 152°36'30" west longitude, permanent oil and gas facilities shall be restricted to those facilities determined necessary by the AO, because other locations are either technically infeasible or economically prohibitive. Examples of facilities likely to be considered necessary under these criteria may include, but are not limited to: (1) a staging area, causeway, or dock that requires a year-round road to the inland area; (2) a seawater-treatment plant and associated pipeline or road; and (3) a production pad and associated pipeline for an oil field that cannot be produced from outside the 2-mile zone. Airports, camps, and some types of processing facilities are not likely to be considered necessary. When submitting a development and production plan that includes structures in this 2-mile zone, the lessee shall demonstrate to the satisfaction of the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, the need for the location of permanent oil and gas facilities within this zone. [Alts. D-E; \*]
- 27. Causeways, docks, artificial gravel islands, and bottom-founded structures may be permitted if the AO, in consultation with the State and NSB, determines that a causeway or other structure is necessary for field development and that no feasible and prudent alternatives exist. A monitoring program may be

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required to address the objectives of water quality and free passage of fish, and mitigation shall be required where significant deviation from objectives occurs.

The Bureau of Land Management discourages the use of continuous-fill causeways. Environmentally preferred alternatives for field development include use of buried pipelines, onshore directional drilling, or elevated structures. Approved causeways must be designed, sited, and constructed to prevent significant changes to nearshore oceanographic circulation patterns and water-quality characteristics (e.g., salinity, temperature, suspended sediments) that result in exceedances of water-quality criteria, and must maintain free passage of marine and anadromous fish.

Causeways and docks shall not be located in river mouths or deltas. Artificial gravel islands and bottom-founded structures are prohibited in river mouths or active stream channels on river deltas, except as provided in the paragraph above. [Alts. B-E].

28. Two narrow land corridors between Teshekpuk Lake and the Beaufort Sea have been identified as crucial caribou movement corridors. These areas lie northwest and east of Teshekpuk Lake (Fig. E-5). Within these two identified areas, the following requirements may be imposed:
- Placement of permanent facilities may be prohibited or restricted; [Alt. E;\*]
  - Off-lease site development may be required; [Alt. E;\*]
  - Burial of pipelines may be required; [Alt. B-E;\*]
  - Permanent oil and gas facilities are prohibited within a zone extending 4 miles eastward from the eastern shore of Teshekpuk Lake in the area between the lake and Kogru Inlet, as depicted on Figure E-5. [Alt. E;\*]

Proponents of modifications to these restrictions must demonstrate to the satisfaction of the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, that such restrictions are not technically, economically, or environmentally practicable and that the goals of the stipulation can be accomplished through alternative means.

29. Maximum economically feasible extended-reach drilling shall be used for production drilling to minimize the number of pads and the network of roads between pads. [Alts. D-E; \*]
30. All oil and gas facilities, except airstrips, docks, and seawater treatment plants, will be collocated with drill pads. If possible, airstrips shall be integrated with

roads. Exceptions under Alternative E may be granted or required by BLM in consultation with appropriate Federal, State, and NSB regulatory and resource agencies if a development is permitted within 3,280 feet of a high-use goose-molting lake. [Alts. D & E;\*]

31. Within the Teshekpuk Lake Caribou Habitat LUEA, lessees shall orient linear corridors when laying out oil field developments to address migration and corralling effects and to avoid loops of road and/or pipeline that connect facilities. [Alts. D-E]
32. Within the Goose Molting Habitat LUEA, oil and gas development activities shall avoid alteration of critical goose-feeding habitat types along lakeshore margins (grass/sedge/moss) as identified by the AO in consultation with FWS. [Alt. E]
33. Within the Goose Molting Habitat LUEA, oil and gas facility layout shall incorporate features (e.g., temporary fences, siting/orientation) that screen/shield human activity from view of any goose-molting lake, as identified by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, within 3 kilometers. [Alt. E]
34. Major construction activities (e.g., sand/gravel extraction and transport, pipeline and pad construction, but not drilling) shall be suspended within the Goose Molting LUEA from June 15 through August 20, unless approved by the AO in consultation with the appropriate Federal, State, and NSB regulatory and resource agencies. [Alts. B-E]
35. Lessees shall separate elevated pipelines from roads by a 500-foot minimum, if feasible. Separation of roads from pipelines may not be feasible, for example, in narrow land corridors between lakes and where pipes and roads converge on a drill pad. [Alts. B-E; \*]
36. To minimize delay or deflection of caribou movements, lessees shall place the pipeline on the appropriate side of the road (depending upon general caribou movements in the area). [Alts. B-E; \*]
37. Ramps over pipelines, buried pipe, or pipe buried under the road may be required by the AO, after consultation with appropriate Federal, State, and NSB regulatory and resource agencies, in the Teshekpuk Lake Caribou Habitat LUEA where facilities or terrain funnel caribou movement. [Alts. B-E]
38. At a minimum, aboveground pipelines shall be elevated 5 feet, as measured from the ground to the bottom of the pipe, except where the pipeline intersects a road, pad, or a ramp installed to facilitate wildlife

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passage. The AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, may make an exception if no feasible and prudent way exists to meet the requirement. [Alts. B-E]

39. Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited within and adjacent to waterbodies in the Fish Habitat LUEA at the distances identified below:
- a. **Ikpikpuk River:** a ½-mile setback from the bank of the Ikpikpuk River within the planning area.
  - b. **Miguakiak River and Teshekpuk Lake:** a ½-mile setback from each bank of the Miguakiak River and around the perimeter of Teshekpuk Lake.
  - c. **Fish Creek:** a ¼-mile setback from each bank of Fish Creek and extending the length of BLM-managed lands below the confluence of Inigok Creek.
  - d. **Judy Creek:** a ¼-mile setback from each bank of Judy Creek and extending from the mouth to the confluence of an unnamed tributary in Sec. 8, T.8N., R.2W., Umiat Meridian.
  - e. **Colville River:** a ½-mile setback from the highest high water mark on the western bank of the Colville River extending the length of BLM managed lands in the planning area.
  - f. **Deep-Water Lakes:** a ¼-mile setback around the perimeter of any fish-bearing lake within or partially within the deep lake zone.

On a case-by-case basis, essential pipeline and road crossings shall be permitted through setback areas in those instances where no other suitable sites are available. Stream crossings will be sited perpendicular to the main channel flow; lake crossings will be at the narrowest point. [Alts. B-E]

40. Gravel mining sites required for development activities shall be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where feasible and prudent, gravel sites must be designed and constructed to function as water reservoirs for future use. Gravel mine sites are prohibited within active floodplains unless the AO, in consultation with appropriate Federal, State, and NSB regulatory and resource agencies, determines that there is no feasible and prudent alternative, or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and the site is closed.

Mine site development and rehabilitation within floodplains shall follow the procedures outlined in

McLean (1993) *North Slope Gravel Pit Performance Guidelines*, ADF&G Habitat and Restoration Division Technical Report 93-9.

- 41. Facilities, roads, airstrips, and pipelines shall be sited outside of the active floodplain of rivers and creeks with a minimum setback of 500 feet and 500 feet away from fish-bearing lake basins. [Alts. B-E].
- 42. Bridges, rather than culverts, will be used for road crossings on all major rivers, as identified by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies to reduce the potential of ice-jam flooding and erosion. Roads shall be designed and sited to minimize the length that is perpendicular to sheet flow. When necessary, culverts on smaller streams shall be large enough to avoid restriction on fish passage and adverse effect on natural stream flow. [Alts. B-E]
- 43. The natural drainage pattern shall be identified prior to and maintained during and after construction. Fill placed adjacent to a stream or lake shall be armored to limit erosion from flooding or wave action. Cross-drainage structures shall be sited, maintained, and properly abandoned to prevent impoundments or alteration of local or areawide hydrology.
- 44. Dewatering during construction shall be conducted using Best Management Practices (BMP's). A current list of BMP's shall be available from the AO. [Alts. B-E]
- 45. Permanent oil and gas facilities, except approximately perpendicular pipeline crossings, are prohibited in the Colville River Raptor, Passerine, and Moose Area LUEA. This restriction does not apply within 1½ miles of the Umiat airstrip. [Alts. B-E]
- 46. Surface structures, except approximately perpendicular pipeline crossings and ice pads, are prohibited within the Pik Dunes LUEA. [Alts. C-E]
- 47. Surface structures, except approximately perpendicular pipeline crossings and ice pads, are prohibited within the Ikpikpuk Paleontological Sites LUEA. [Alts. C-E]
- 48. Lessees shall minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region. Lessees shall identify on a map or aerial photograph the largest surface area, including future expansion areas, within which a facility is to be sited or an activity is to occur. The AO shall consult with appropriate Federal, State, and NSB regulatory and

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resource agencies to identify key wetlands. To minimize impact, the lessee shall avoid siting facilities in the identified wetlands unless no feasible and prudent alternatives exist. Key wetland types include (but are not limited to) fish-bearing lakes and streams, riparian shrub, and the following classes described by Bergman et al. (1977): shallow and deep-*Arctophila* ponds, deep-open lakes, basin-complex wetlands, and coastal wetlands.

49. Permanent oil and gas facilities are prohibited within 1 mile of known long-term cabins or campsites, except that pipelines and roads shall be allowed up to ¼ mile from such cabins or campsites. An exception to this restriction may be granted by the AO, if it is determined that no other feasible and realistic route exists and if a change would have minimal effect on subsistence users. [Alts. B-E]

### Ground Transportation:

50. The following ground-traffic restrictions shall apply to permanent oil and gas-related roads in the areas and time periods indicated:
- Within the Teshekpuk Lake Caribou Habitat LUEA from May 20 through June 20: [Alts. D-E]
    - Traffic speed shall not exceed 15 miles per hour.
    - Traffic will be minimized (a reasonable target would be four convoy round-trips per day between facilities). Nonessential operations requiring vehicles shall be suspended during this time period.
  - Within the Teshekpuk Lake Caribou Habitat LUEA from May 20 through August 1: [Alts. D-E]
    - Caribou movement shall be monitored.
    - Based on this monitoring, traffic will cease when a crossing by 10 or more caribou appears to be imminent.
  - Within the Teshekpuk Lake Caribou Habitat LUEA from May 20 through August 20: [Alts. D-E]
    - Convoying shall be used to minimize the number of disturbances due to road traffic.
    - Personnel shall be bussed between work sites and other facilities to minimize the number of vehicles on the road.
  - Within the Goose Molting LUEA from June 21 through August 20: [Alt. E]
    - Traffic shall be minimized (a reasonable target would be four convoy round-trips per day between facilities). Nonessential operations requiring vehicles shall be suspended during this time period.

51. Major equipment, materials, and supplies to be used at oil and gas work sites in the Teshekpuk Lake Caribou LUEA shall be stockpiled prior to or after the period May 20 through June 20 to minimize road traffic during that period. [Alts. D-E]

52. Chasing wildlife with ground vehicles is prohibited.

### Air Traffic:

(Note: BLM's authority to restrict air traffic is limited to the practices of those parties obtaining authorization to use BLM-administered lands.)

53. Use of aircraft larger than a Twin Otter by authorized users of the planning area, including oil and gas lessees, from May 20 through August 20 within the Teshekpuk Lake Caribou Habitat LUEA, shall be for emergency purposes only. [Alts. D-E]
54. Helicopter overflights by oil and gas lessees shall be suspended in the Goose Molting LUEA from June 15 through August 20. [Alts. B-E]
55. Fixed-wing aircraft takeoffs and landings by authorized users of the planning area shall be limited to an average of one round-trip flight a day from May 20 through June 20 at aircraft facilities within the Teshekpuk Lake Caribou Habitat LUEA. Within the Goose Molting LUEA, use of fixed-wing aircraft by authorized users shall be restricted from June 15 to August 20: (a) limited to two round-trip flights/week; (b) restricted to flight corridors established by BLM in consultation with appropriate Federal, State, and NSB regulatory and resource agencies. [Alts. B-E]
56. Aircraft shall maintain 1,000 feet aboveground level (AGL) (except for takeoffs and landings) over caribou winter ranges from October 1 through May 1 and 2,000 feet AGL over the Teshekpuk Lake Caribou Habitat LUEA from May 16 through July 31, unless doing so would endanger human life or violate safe flying practices.
57. Aircraft shall maintain an altitude of 1,500 feet AGL when within ½ mile of peregrine falcon nests from April 15 through August 5, unless doing so would endanger human life or violate safe flying practices.
58. Hazing of wildlife with aircraft is prohibited.

### Oil Field Abandonment:

59. Upon abandonment or expiration of a lease or oil- and gas-related permit, all facilities shall be removed and the sites rehabilitated to the satisfaction of the AO, in

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consultation with appropriate Federal, State, and NSB regulatory and resource agencies. The AO may determine that it is in the best interest of the public to retain some or all of the facilities. [Alts. B-E]

60. Roads, airstrips, and other gravel fill shall be removed or modified upon field abandonment to render them unusable for enhanced access into and within the Goose Molting LUEA. [Alt. E]

### **Subsistence:**

61. During exploration, development, and production, the lessee shall monitor oil and gas activities to determine its effects on subsistence and provide reports to BLM and the Subsistence Advisory Panel. [Alts B-E]
62. Lessees shall not unreasonably restrict access in oil field development areas to subsistence users. [Alts. B-E].
- a. Lessees shall establish procedures for entrance to facilities, the use of roads, and firearms discharge. These procedures will be coordinated through the Subsistence Advisory Panel. In cases where the lessee and the Panel disagree, the AO will determine the appropriate procedure.
  - b. Lessees shall develop and distribute information about how to hunt in development areas safely (so equipment is not damaged and people are not endangered) to the communities through newsletters, meetings, radio, and signs in both English and Inupiaq.
63. The lessee shall notify the AO of all concerns expressed by subsistence hunters during operations and of steps taken to address such concerns. The AO shall resolve any conflicts that arise between subsistence hunters and the lessee over what steps should be taken to address these concerns. [Alts. B-E].
64. Prior to submitting an exploration plan or development and production plan, the lessee shall consult with the potentially affected subsistence community(ies) (e.g., Nuiqsut, Barrow, Atqasuk), the NSB, and the Subsistence Advisory Panel to discuss potential conflicts with the siting, timing, and methods of proposed operations and safeguards or mitigating measures that could be implemented by the operator to prevent unreasonable conflicts. Through these consultations, the lessee shall make every reasonable effort to ensure that exploration, development, and production activities are compatible with subsistence hunting and fishing activities and shall not result in

unreasonable interference with subsistence harvests in the planning area.

A discussion of resolutions reached during this consultation process and plans for continued consultation shall be included in the exploration plan or development and production plan. In particular, the lessee shall show in the plan how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. Lessees also shall include a discussion of multiple or simultaneous operations, such as ice-road construction and seismic activities, that can be expected to occur during operations to more accurately assess the potential for cumulative effects. Communities, individuals, and other entities who were involved in the consultation shall be identified in the plan. The lessee shall send a copy of the exploration or development and production plan to the potentially affected community(ies), the NSB, and the Subsistence Advisory Panel at the time they are submitted to BLM to allow concurrent review and comment as part of the plan approval process.

When conflicts arise between the lessee and other interested parties regarding what steps should be taken to address the concerns, the AO shall resolve the issue. [Alts. B-E]

### **Orientation Program:**

65. The lessee shall include in any exploration or development and production plans a proposed orientation program for all personnel involved in exploration or development and production activities (including personnel of lessee's agents, contractors, and subcontractors) for review and approval by the AO. The program shall be designed in sufficient detail to inform individuals working on the project of specific types of environmental, social, and cultural concerns that relate to the northeastern part of the NPR-A. The program shall address the importance of not disturbing archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals and provide guidance on how to avoid disturbance. This guidance shall include the production and distribution of information cards on endangered and/or threatened species in the planning area. The program shall be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel will be operating. The orientation program shall also include information concerning avoidance of conflicts with subsistence, commercial-fishing activities, and pertinent mitigation.

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The program shall be attended at least once a year by all personnel involved in onsite exploration or development and production activities (including personnel of lessee's agents, contractors, and subcontractors) and all supervisory and managerial personnel involved in lease activities of the lessee and its agents, contractors, and subcontractors.

Lessees shall maintain a record of all personnel who attend the program onsite for so long as the site is active, though not to exceed the 5 most recent years of operations. This record shall include the name and dates(s) of attendance of each attendee. [Alts. B-E]

### Traditional Land Use Sites:

66. Lessees shall conduct an inventory of known traditional land use sites prior to any field activity. This inventory shall include sites listed by the NSB's Inupiat History, Language, and Cultural Commission. Based on this inventory, the lessee shall develop a plan to avoid these sites and to mitigate any damage that could result from field activities. The plan also shall indicate how access to the site by local subsistence users will be provided. Copies of the plan shall be submitted to BLM and the Subsistence Advisory Panel with any permit application for exploration or development. [Alts B-E].

### Other Activities:

67. It is the responsibility of the authorized user to ensure that all people brought to the planning area under its auspices adhere to these stipulations. Therefore, authorized users of the planning area shall provide all employees, contractors, subcontractors, and clients with briefings. The briefings shall cover the stipulations applicable to the lease and/or permit. A copy of applicable stipulations shall be posted in a conspicuous place in each work site and campsite.
68. The authorized user shall protect all survey monuments and be responsible for survey costs if remonumentation is needed as the result of the user's actions.
69. A letter of nonobjection from the surface landowner or the Native corporation(s) that have selected surface lands will be required to be on file with the AO before entry on those lands.
70. All activities shall be conducted avoid or minimize disturbance to vegetation.
71. The BLM, through the AO, reserves the right to impose closure of any area to operators in periods when fire danger or other dangers to natural resources are severe.
72. The authorized user shall be financially responsible for any damage done by a wildfire caused by its operations.
73. Construction camps are prohibited on frozen lakes or on river ice. The location of construction camps on river sand and gravel bars is allowed and, where feasible, encouraged. Where leveling of trailers or modules is required and the surface has a vegetative mat, leveling shall be accomplished with blocking rather than leveling with a bulldozer.
74. Use of pesticides without the specific authority of the AO is prohibited.
75. The feeding of all wildlife by authorized users is prohibited.
76. Hunting by lessees employees and by agents and contractors is prohibited. [Alts. B-E]
77. Off-pad activities by lessees, contractors, subcontractors, and their employees is prohibited within the Goose Molting LUEA from June 15 through August 20, except in emergencies or if approved by the AO. [Alt. E]
78. Public access to goose-molting areas by way of or through the use of oil field facilities is prohibited except by subsistence users. [Alt. E]
79. Upon finding any cultural or paleontological resource, the authorized user, or his or her designated representative, shall notify the AO and suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the AO.
80. Petroleum exploration and production activities are prohibited within ½ mile of occupied grizzly bear dens, unless alternative mitigative measures are approved by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies.
81. Oil and gas lessees and their contractors and subcontractors shall prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to (a) minimize attraction of bears to the drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on drill sites and the proper

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procedures to take; (d) if authorized, deter bears from the drill site; (e) provide contingencies in the event bears do not leave the site or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The lessee's shall develop educational programs and camp layout and management plans as they prepare their lease operations plans. These plans shall be developed in consultation with appropriate Federal, State, and NSB regulatory and resource agencies and submitted to the AO.

82. Structures shall be restricted to an area at least 100 feet from the nearest body of water.

**D. COMPARISON OF ALTERNATIVES:** Table II.D.1 summarizes some of the key management actions proposed under each alternative. For a complete list of stipulations for each alternative, readers should refer to Section II.C.7. For the management constraints associated with Wild and Scenic River designations, readers should consult Appendix G. Table II.D.2 summarizes the impacts of the first sale under each alternative and the impacts of the multiple-sale scenario for each alternative. The alternatives are described in Section II.C. The cumulative case, Section IV.H, analyzes the effects that past, present and reasonably foreseeable future actions might have on resources in and adjacent to the planning area. In addition to the potential effects associated with actions in the Northeast NPR-A Planning Area, the cumulative-case analysis includes the potential effects of those activities listed in Tables IV.A.5-1 through 7. The cumulative-case analysis for each of the alternatives is presented in a comparative format in Table IV.H.1.

### **E. NEED FOR FURTHER NEPA ANALYSIS:**

Additional NEPA analysis would be required for any management decision that goes beyond the scope of this document. Where possible, the analysis would tier from this IAP/EIS.

One important aspect of this document is a possible oil and gas leasing program. It is the subject of much of the analysis in Section IV. In compliance with current Council on Environmental Quality regulations, part of this analysis relies on a hypothetical development scenario based on general information about where there is high potential for oil and gas in the planning area and current industry exploration and development practices. While this analysis is adequate for oil and gas leasing, any further development, including an exploratory drilling program or the construction of the infrastructure necessary for development of an oil discovery, would require further NEPA analysis based on specific and detailed information

about where and what kind of activity would occur. This analysis would result in the appropriate NEPA documentation for specific projects.

The analysis contained in this IAP/EIS addresses the overall impacts of making certain lands available for oil and gas leasing. It also analyzes the impacts of a first sale and will act as NEPA documentation for that sale. Subsequent sales are authorized under Alternatives B through E and the Preferred Alternative. Prior to conducting each additional sale, the agency will conduct a NEPA analysis, tiering from the IAP/EIS. If the analysis in the IAP/EIS is deemed to be valid, the NEPA analysis for the second and subsequent sales may only require an administrative determination or an Environmental Assessment.

## **F. INTERRELATIONSHIPS:**

**1. Introduction:** Many Federal laws and executive orders apply in one way or another to the planning and permitting process for any development, including an oil and gas program, in the NPR-A. Some of the major laws and executive orders include the Endangered Species Act, National Historic Preservation Act (NHPA), Archaeological Resource Protection Act, Native American Graves Protection and Repatriation Act, Coastal Zone Management Act, Wild and Scenic Rivers Act (WSRA), Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), Clean Air Act (CAA), Clean Water Act, Rivers and Harbors Act of 1899, the Fish and Wildlife Coordination Act, and Executive Order 12898 on Environmental Justice.

**2. Endangered Species Act and National Historic Preservation Act Consultation and Coastal Zone Management:** The ESA specifies consultation with the FWS and the National Marine Fisheries Service. The NHPA requires consultation with the Alaska State Historic Preservation Officer and, when there are effects on cultural resources listed on or eligible for inclusion in the National Register of Historic Places, with the President's Advisory Council on Historic Preservation. The BLM has completed these consultations. The BLM also is working with the State of Alaska through its representative on the planning team to ensure that the mandates of the CZMA are met. The required compliance documentation is included in this final IAP/EIS.

### **3. Wild and Scenic Rivers Act Compliance:**

The WSRA requires that BLM address wild and scenic river values in its planning efforts. In this planning effort, BLM is re-evaluating studies previously completed pursuant to Section 105(c) of the NPRPA using new information gathered since those studies were published, which is discussed in this IAP/EIS. Based on its

evaluations, BLM is including in the alternatives in Section II.C four possible options for managing the wild and scenic values of the Colville River. No other rivers in the planning area were found to be eligible.

#### **4. Alaska National Interest Lands Conservation Act Section 810 Compliance:**

Appendix D contains an evaluation and finding of effects on subsistence that is required by Section 810 of ANILCA. This evaluation also is based in part on information contained elsewhere in this IAP/EIS. Public hearings seeking comment on this evaluation have been held in Anaktuvuk Pass, Anchorage, Atkasuk, Barrow, Bethel, Fairbanks, Nuiqsut, and Wainwright, in Alaska and in Washington, D.C. and San Francisco, California in connection with preparation of this IAP/EIS.

**5. Future Interrelationships:** Compliance with the requirements of the CWA, the CAA, and the Rivers and Harbors Act of 1899 will occur if and when BLM considers authorizing specific exploratory drilling or oil field development. These future decisions would require NEPA documentation and coordination with many Federal, State, or NSB agencies before the necessary permits for these activities could be issued. Table II.F.1 lists environmental permits and approvals that may be necessary for any future project development within the planning area. The BLM would ensure that any permittee had attained the proper permits/authorizations from those agencies before approving proposed activities. In developing NEPA documentation for any such future activities, it would be necessary to consider some of the data needs of these agencies so that they can either use the document or tier off of it for any additional required analysis.

The following discussion focuses on some of the permits that would be required by various agencies during any exploration or development activities in the planning area.

The U.S. Army Corps of Engineers (COE) administers two relevant permits. The first is issued pursuant to Section 404 of the CWA, which addresses the discharge of dredged or fill material into U.S. waters, including wetlands. In addition, ADEC must certify that the 404 permit meets State water-quality standards. To meet Section 404 requirements, any future NEPA document would describe the project's components, identify the type and amount of wetlands and other waters affected by each alternative, describe anticipated impacts, and discuss mitigation measures that could minimize impacts to these resources.

Section 10 of the Rivers and Harbors Act of 1899 is the source for the second COE-administered permit. To address the requirements of this section as they pertain to construction of structures or work in or affecting navigable

waters of the U.S., any future NEPA document must describe the navigable waters of the United States within the project area and how structures in, on, or over these waters would affect them during construction and operation. The NEPA document would describe the alternatives and compare possible impacts to coastal integrity and navigation from each alternative. It also would discuss mitigating measures to minimize these impacts.

The USEPA issues NPDES permits required by the CWA. To provide information for these permits, any future NEPA document would describe existing water quality and the quantity of water requirements for the proposed project; expected pollutants and their concentrations; and the quality and locations of wastewater-treatment facilities and discharges. The USEPA administers and the ADEC issues other CWA-mandated permits for Waste Water Authorization, Oil Discharge Prevention and Contingency Plans, Storm Water Discharge, and Underground Injection Authorizations.

The USEPA also issues Prevention of Significant Deterioration (PSD) air-quality permits required by the CAA, while the ADEC issues other air-quality permits. A future NEPA document would provide an analysis of meteorological factors and air-quality baseline conditions, and it would predict impacts to air quality during construction and operations to provide information necessary to evaluate the issuance of these permits.

Permittees involved in oil and gas exploration and development in the planning area also are required to secure various permits from State agencies that have received delegated Federal authority or have primary State authority to implement specific environmental protection laws. Required permits address issues such as air quality, water quality and water use, fish habitat, spill-contingency planning, solid-waste disposal, storage and injection of drilling and production wastes, and drilling authorization (see Table II.F.1 for a list of specific State permits/approvals).

The NSB has a zoning ordinance that includes the planning area. It is BLM's policy to consider local zoning and community plans, such as Nuiqsut's *Nuiqsut paisanich*, to the extent possible in any decision regarding the use of Federal lands.

**6. Subsistence Advisory Panel:** To ensure local participation in the decisionmaking process as it relates to subsistence, BLM will establish a local Subsistence Advisory Panel under Alternatives B through E and the Preferred Alternative. The responsibilities of this panel will be to:

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- (a) provide recommendations to BLM concerning planning, research, monitoring, and assessment activities needed to facilitate responsible development and protect subsistence resources and uses in the NPR-A;
- (b) identify potential conflicts between subsistence use and other resource uses;
- (c) inform local communities and agencies about panel activities and agency actions affecting subsistence resources and uses in the planning area;
- (d) work with the NSB to maintain a repository of subsistence information concerning the planning area for local communities and agencies; and
- (e) help BLM to ensure continuity and consistency in the collection and use of subsistence information by the advisory panel and other groups.

The panel will review resource-related development plans and make recommendations to BLM regarding whether they adequately consider subsistence. The BLM will work with the panel and any permittees to resolve conflicts between subsistence use and resource development. The BLM will work closely with the panel to develop a program to monitor the effects of development on subsistence resources and users. Should monitoring identify the existence of impacts on subsistence uses, the panel will make recommendations to BLM regarding (a) additional mitigating measures, (b) potential relocation of operations or redesign of facilities, and (c) more effective mechanisms for enforcement of subsistence stipulations.

The exact membership of and method for creating the panel will be determined by BLM in consultation with the NSB, the State of Alaska, and the FWS as part of an oil and gas leasing program, if leasing is resumed in the planning area. In developing the panel, BLM will consider combining the work of the panel with other existing and proposed local advisory groups. The provisions of the Federal Advisory Committee Act will be followed.

### **7. Interagency Research and Monitoring**

**Team:** Under the Preferred Alternative, the BLM will invite representatives from Federal, State, and NSB agencies with biological expertise to participate on an Interagency Research and Monitoring Team for the planning area. The purpose of the team will be to coordinate the respective agencies' research and monitoring efforts and to inform lessees on research and monitoring pursuant to Stipulations 29 and 59. In designing research efforts, it will consult and cooperate with the Subsistence Advisory Panel.

The team should provide information and recommendations on specific research and monitoring topics. The research and monitoring topics should be issue based and focus on the effectiveness of stipulations and

other mitigative management options developed in this IAP/EIS, any subsequent NEPA-related documents authorizing activities in the planning area, and alternatives to these measures. The findings obtained through research and monitoring should provide guidance to the AO on the effectiveness of protective measures, both those established by management decisions and options to these measures.

Research designs should build on research already conducted on the North Slope. Possible research and monitoring topics include: effects of permanent facilities on calving and migrating caribou, molting geese, and predator/scavenger populations; impacts of development on subsistence resources, access, and uses; impacts of development on air, soils, and water; effects of ground and air traffic and other noise sources on birds and on pregnant caribou and caribou with calves; and the effects of, and best prevention and response technology for, oil and other hazardous-substance spills. Research designs and reports issued by participating agencies following the guidance of the Interagency Research and Monitoring Team will be subject to independent scientific review prior to completion.

**8. Bird Conservation Area:** Bird Conservation Areas (BCA's) are part of the overall strategy of conservation planning within Partners in Flight (PIF), a program initiated by the National Fish and Wildlife Foundation to promote the conservation of bird diversity in North America. The PIF is not an organization, but a cooperative effort. Participants in PIF include nongovernmental organizations, State/Provincial and Federal agencies, academicians, and private industry from several nations. The BCA's are large areas that sustain or are capable of sustaining healthy populations of birds. They typically include multiple cooperating landowners who voluntarily coordinate their management practices to provide a constant base of habitat needed by birds. Management practices to promote bird conservation in these areas must be compatible with other social and economic priorities.

As such, BCA's involve varied landowners and, in the case of the proposed BCA along the Colville River, those would be the United States (through the BLM), the State of Alaska, and the Arctic Slope Regional Corporation. The BCA's are voluntary agreements among landowners that could be terminated at any time by any owner. There are no Federal laws or regulations that address BCA's and, thus, no related Federal authority to ensure protection of riparian habitat on State or private lands.

## G. ALTERNATIVES AND ISSUES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS:

A number of issues and alternatives were identified and eliminated from detailed consideration. These include:

- Planning for the entire NPR-A at once;
- Single combined "conservation" alternative;
- Permanent legislative protection, such as Wildlife Refuge or wilderness designation;
- Legislative action to open the planning area to hardrock mineral entry;
- "Permanent" administrative protection for the Planning Area;
- State of Alaska, North Slope Borough, and other commenters' "Preferred Alternatives";
- ASRC land trade alternative; and
- Subsistence camps and cabins.

**Planning for the entire NPR-A at once:** Some commenters would have preferred that the plan address all of the NPR-A. The BLM considered this possibility prior to issuing the Notice of Intent to Plan in February 1997. However, the BLM determined to focus its analysis in a more detailed way on a smaller area encompassing some of the highest value surface resources and of the greatest interest for oil and gas development. The northeast portion of the NPR-A is closest to the existing petroleum infrastructure. The small to medium oil fields that are considered the most likely to exist in the NPR-A would not justify extension of that infrastructure to the central and western parts of the Reserve, until and unless other small to medium fields are found and developed in the northeast part of the Reserve. Limiting the size of the planning area enabled BLM to do a more detailed study of the surface and subsurface resources and plan much more specifically for the protection of the outstanding surface resources the area encompasses. The agency determined that this was the preferred scope to include in the IAP/EIS rather than a much more general plan, which would have resulted from attempting to plan for the entire 23-million-acre NPR-A all at once.

**Single combined "conservation" alternative:** Some commenters requested that all the various surface protective measures and designations that are included in Alternatives B through E and the Preferred Alternative should be recombined into a single "conservation" alternative and included in the IAP/EIS. The BLM considered doing this, but determined that combining all the surface protection measures into one alternative is unnecessary and actually would be redundant, because the information that would be presented there already is included in the discussion of existing alternatives that have been thoroughly evaluated in the IAP/EIS. Table II.D.1 summarizes and compares the specific surface protective

measures proposed for each high value surface resource or habitat including: the Teshekpuk Lake watershed; goose-molting habitat; spectacled eider breeding range; the Teshekpuk Lake caribou-use areas (including for calving and insect relief); deep-lake fish habitat; the Colville River raptor, passerine, and moose habitat areas; the Umiat recreation site; highly scenic areas; the Pik Dunes area; the Ikpiukuk River paleontological sites; and potential Colville River WSR designation. Many of these high value surface resources overlap or are contained within already designated Special Areas (Sec. I.B.2). The specific protective measures and designations considered for each of these surface resources are presented and discussed in detail in the five action alternatives (including the Preferred Alternative) (Sec. II.C). Stipulations developed for Alternatives B through E and the Preferred Alternative would provide additional protection (e.g., no surface entry; seasonal restrictions and setbacks) for particular high value surface resources identified in the IAP/EIS (Sec. II.C.7).

Recognizing that the different elements of the IAP could have been presented in many different combinations, the agency chose to present a reasonable range of alternatives that are consistent with the statutory direction in the NPRPA and Federal Land Policy and Management Act and that would achieve the purposes and objectives of this planning effort as described in Section I.A. Public comments were sought on all parts of each proposed alternative, including the surface protective measures. No commenters identified any high value surface resources or specific protective measures that were omitted from consideration. It was explained in the draft EIS that the Preferred Alternative could be selected from one of the Alternatives A through E, or it might be developed as a variation on them by combining aspects of one or more of the alternatives considered in detail in the EIS (Secs. I.B.5 and II.C.1). The consequences of not leasing the planning area at all were considered in Alternative A, the no-action alternative. Because all the information necessary to adequately inform decisionmakers regarding the selection of appropriate surface protective measures and designations appears in the discussion of the alternatives that were considered in detail in the IAP/EIS, BLM determined that it would not assist the planning process to present another variation on the six alternatives by combining all the surface protective measures together into a single new alternative.

**Permanent legislative protection, such as wildlife refuge or wilderness designation:** Some commenters suggested alternatives that would have required Congressional action to designate part or all of the planning area as a national wilderness or a wildlife refuge. Because legislative actions such as designating a new national wildlife refuge or wilderness area would not meet the management purposes and objectives of this planning effort as described

## II. ALTERNATIVES

in Section I.A, alternatives proposing such actions were determined to be outside the scope of the IAP/EIS, and BLM decided not to consider such proposals for the planning area. As indicated in Section I.A of this IAP/EIS, the purpose of this planning effort is to determine how BLM can best administratively manage all the diverse resources of the northeast portion of the NPR-A consistent with the existing statutory direction for its management. This planning does not include proposing new or different legislative designations that would change the basic statutory management direction for the area. Rather, it requires balancing the directives in the NPRPA, encouraging oil and gas leasing while requiring necessary and appropriate protection of important surface resources and uses. These mandates will be carried out through this long-term management plan and regulations, as required. Evaluation of other legislative management regimes that Congress has applied to differently designated public land would not meet BLM's management objectives in preparing this IAP and, therefore, are beyond its scope.

In addition, with respect to wilderness designation, ANILCA § 1320 makes such reviews discretionary on BLM-managed lands in Alaska, and P.L. 96-514 states that section 603 of the Federal Lands Policy and Management Act of 1976 (90 Stat. 2743) (Bureau of Land Management wilderness study) shall not be applicable to the NPR-A. Because wilderness designation would not meet the purposes and objectives of this planning effort as described in Section I.A, BLM decided not to consider possible wilderness designation for the planning area in the IAP/EIS.

Similarly, consideration for designation as a wildlife refuge also would not meet the purposes and objectives of this planning effort as described in Section I.A. In addition, a wildlife refuge was not considered to be a reasonable alternative, because Congress itself rejected such proposals in the NPR-A during Congressional efforts to enact the ANILCA.

A review of WSR eligibility and suitability is required by the Wild and Scenic Rivers Act in conjunction with agency land use planning efforts (16 U.S.C. § 1276(d)). The BLM has incorporated a review and recommendation process in this IAP/EIS to satisfy that statutory requirement.

**Legislative action to open the planning area to mineral entry (hardrock):** The NPR-A has been closed to mining since its creation in 1923 and, more recently, it was specifically closed in the legislation transferring jurisdiction to the Department of the Interior in 1976 (42 U.S.C. § 6502). It was again kept closed to mining when the area was opened to oil and gas leasing in 1980. Thus, opening the area to mining would require Congressional action through legislation. Because opening the area to

mineral entry would not meet the management purposes and objectives of this planning effort as described in Section I.A, it is beyond the scope of this IAP/EIS, and BLM decided not to consider such action for the planning area.

**"Permanent" Administrative Protection for the Planning Area:** Some commenters asked that an alternative be presented that would provide permanent surface protection for all or certain portions of the planning area. Many of the protections suggested would require Congressional action (see the discussion above of alternatives proposing specific protective legislative designations). A few commenters also asked for a permanent administrative closure or withdrawal of the area from all leasing, but given the explicit rescission of prior withdrawals from oil and gas leasing that Congress included in the NPRPA, 42 U.S.C. § 6508(4), together with § 1326 of ANILCA, 16 U.S.C. § 3213, which requires Congressional approval of executive withdrawals of more than 5,000 acres in Alaska, a permanent administrative withdrawal from leasing would require legislative action. As explained previously, alternatives requiring legislative changes to implement them were eliminated from detailed consideration in the IAP/EIS, because they fundamentally would not meet the purposes and objectives of this planning effort as described in Section I.A. These purposes are to develop an administrative plan for BLM management of the important surface and subsurface resources of the Northeast NPR-A Planning Area that is consistent with existing statutory direction for its management. Consequently, alternatives requiring legislative action were determined to be beyond the scope of this EIS.

Although proposals to effectuate a "permanent" withdrawal from leasing have been eliminated from detailed consideration, the IAP/EIS does consider a broad range of alternatives making the entire area or portions of it unavailable for leasing for the life of this IAP. For example, Alternative A (the no-action alternative) would allow no oil and gas leasing anywhere in the planning area. Alternatives B through E and the Preferred Alternative consider placing different portions of the planning area that are particularly important to fish, wildlife, subsistence, paleontological, scenic, recreational and other surface resources off limits to leasing. All of the high-value surface resources identified by commenters were considered for no leasing in one or more of the alternatives considered in detail in the EIS. Another type of administrative prohibition on leasing that is considered in the alternatives are the setbacks of from ½ to 2 miles in width from all streams, lakes, and coastlines that are considered particularly important habitat for birds, fish, and wildlife, and areas of high subsistence use.

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In addition to placing areas off limits to oil and gas leasing administratively, the IAP/EIS also considers alternatives proposing new and expanded administrative designations for the protection of surface resources that are consistent with existing statutory direction for the planning area. For example, as provided for in the NPRPA, new or expanded Special Area designations are considered in Alternatives B through E and the Preferred Alternative, including for the Ikpiuk River, the Pik Dunes, the Kikiakrorak and Kogosukruk rivers, and certain of their tributaries. (Teshekpuk Lake and the Colville River already are designated as Special Areas and would continue in that status under all the alternatives.) Designation or expansion of a Special Area requires publication of a notice in the *Federal Register*, and Special Areas remain in place unless modified by future Secretarial action and *Federal Register* publication. 43.C.F.R. § 2361.1(c), and (d). Administrative designation of a new Bird Conservation Area for the Colville River and some of its tributaries also is considered in several of the alternatives. In addition, the Colville is considered for designation as a Wild and Scenic River in accordance with provisions of the Wild and Scenic Rivers Act.

The IAP/EIS also considers applying specific administrative prohibitions on the siting of oil and gas development infrastructure in sensitive areas such as goose molting habitat, the Teshekpuk Lake area and the Colville River corridor. For example, the Preferred Alternative proposes prohibiting any permanent oil and gas surface occupancy (including drill pads and rigs, platforms, gravel roads, airstrips, gravel and other material extraction sites, and pipelines) in the northern part of the Teshekpuk Lake Special Area, including within all of Teshekpuk Lake itself, the entire goose-molting habitat LUEA, and the most important caribou calving and insect-relief areas. The Preferred Alternative also proposes an absolute prohibition on development of any roads connecting the planning area to existing oil fields to the east. The IAP/EIS considers a ban on oil- and gas-related surface structures (except for essential pipeline crossings) within 1 mile of the Colville River raptor, passerine, and moose LUEA; within 1 mile of the Kikiakrorak and Kogosukruk rivers; within ½ mile of the perimeter of Teshekpuk Lake, the Miguakiak River, the Ikpiuk River, and Judy Creek; and within 1/4 mile of deepwater, fish-bearing lakes. Surface occupancy also would be prohibited in the Pik Dunes LUEA under the Preferred Alternative. Each of these specific prohibitions or restrictions (along with many others included in the stipulations for all alternatives) are evaluated to provide maximum protection for sensitive surface resources in the planning area and to avoid disturbance of subsistence uses.

The surface occupancy prohibitions and restrictions described above, which are considered in the various alternatives, would place the most sensitive portions of the

planning area off limits for oil-development surface infrastructure such as roads and pipelines. A few commenters asked that the IAP/EIS go beyond consideration of protective measures for sensitive surface resources to consider alternatives, in general, that would identify specific transportation and utility corridors across the planning area or that would completely prohibit the siting of any such corridors within the planning area for any future oil development. However, the specific location of possible future transportation and utility corridors has been determined to be beyond the scope of this EIS, because it is dependent on the location of as yet to be discovered commercial oil and gas fields. Transportation corridor rights-of-way also will require future BLM approval. Consideration of any specific application to site such a corridor (which would have to be consistent with the prohibitions that may be adopted as a result of this IAP/EIS) would require its own separate NEPA analysis and compliance with ANILCA's Title XI requirements. Thus, this issue was determined to be beyond the scope of the IAP/EIS. However, the reasonably foreseeable impacts of siting possible future transportation and utility corridors within the planning area still are assessed as part of the cumulative impacts analysis in the IAP/EIS.

**State of Alaska, North Slope Borough and other commenters' suggested "Preferred Alternatives":** The specific "preferred alternatives" that have been recommended by the State of Alaska, the NSB and other commenters, are not set out and considered in detail in the EIS, because they are variations on, and simply combine differently, elements that were already considered within the range of existing alternatives presented in the EIS. In the responses to comments, Section V.B, the similarities and differences between the commenters "preferred alternatives" and the Preferred Alternative put forth in this final IAP/EIS are described.

**The ASRC land exchange alternative:** A few commenters asked for the inclusion of alternatives that considered exchanging certain lands within the planning area for other lands owned by the Native Corporation outside the NPR-A. Alternatives involving land exchanges have not been considered in detail in this IAP/EIS, because they are outside its scope and do not meet the purposes and objectives of this planning effort as set out in Section I.A. The purpose of this planning effort is to establish how BLM will administratively manage the important resources and values of the public lands in the northeast portion of the NPR-A consistent with existing statutory direction in the NPR-A authorizing statutes. No land exchanges for this area currently are being considered by the Department of the Interior.

**Subsistence camps and cabins:** A few commenters asked that management of subsistence camps and cabins be

## II. ALTERNATIVES

considered in more detail in the IAP/EIS. Authorization of hunting and fishing camps and shelters on the public lands is covered by ANILCA § 1316. A description of subsistence activities and impacts on subsistence is addressed in the IAP/EIS, including maps and descriptions of subsistence camps within the planning area (Figs. III.C.31, 34, and 35). Although subsistence camps and cabins are discussed in the IAP/EIS, management prescriptions for them is not considered in more detail, because additional field inventorying and study is necessary. The BLM is working with the NSB to determine the extent and potential approaches to this issue within existing policy and procedures.

**Other:** The NPR-A Subsistence Impact Analysis Workshop in Nuiqsut, convened by BLM with the help of the State of Alaska and the NSB on August 19-21, 1997, developed a number of recommendations (Appendix F). Many of these recommendations in their original or modified form have been incorporated into the alternatives as management actions or stipulations. Two recommendations dealing with training and hiring programs and compensation for losses have been eliminated from detailed analysis, because they were determined to be beyond BLM's legal authorities.

**Table II.D.1  
Comparison of Management Actions**

TABLE II.D.1

PORTION OF THE PLANNING AREA	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	ALTERNATIVE E	PREFERRED ALTERNATIVE
<b>Teshkepuk Lake Watershed LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Available to oil and gas leasing except that portion within the Teshkepuk Lake Caribou Habitat and the Goose Molting Habitat LUEA's.	■Available to oil and gas leasing except that portion within the Goose Molting Habitat LUEA.	■Available to oil and gas leasing.	■Available to oil and gas leasing except nearly all of that portion in the Goose Molting LUEA
<b>Goose Molting Habitat LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Available to oil and gas leasing.	■Unavailable to oil and gas leasing except small areas in southeast and northwest corners
<b>Spectacled Eider Breeding Range LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing (by closure of Teshkepuk Lake Caribou Habitat LUEA, which overlies the LUEA), except in T. 13 N., Rs. 1 E&W, UM	■Available to oil and gas leasing except that portion within the Goose Molting Habitat LUEA.	■Available to oil and gas leasing.	■Unavailable to oil and gas in area north of Teshkepuk Lake; available in area west and south of lake
<b>Teshkepuk Lake Caribou Habitat LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Available to oil and gas leasing except that portion within the Goose Molting Habitat LUEA.	■Available to oil and gas leasing.	■Available to oil and gas leasing except nearly all of that portion in the Goose Molting LUEA
<b>Fish Habitat LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing.	■Available to oil and gas leasing except that portion within the Teshkepuk Lake Caribou Habitat and the Goose Molting Habitat LUEA's.	■Available to oil and gas leasing except that portion within the Goose Molting Habitat LUEA	■Available to oil and gas leasing.	■Available to oil and gas leasing except nearly all of that portion in the Goose Molting LUEA
<b>Colville River Raptor, Passerine, and Moose Area LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing. ■Propose a portion of the LUEA as part of a Bird Conservation Area.	■Available to oil and gas leasing. ■Propose a portion of the LUEA as part of a Bird Conservation Area.	■Available to oil and gas leasing. ■Propose a portion of the LUEA as part of a Bird Conservation Area.	■Available to oil and gas leasing. ■Propose a portion of the LUEA as part of a Bird Conservation Area.	■Available to oil and gas leasing. ■Propose a portion of the LUEA as part of a Bird Conservation Area.

TABLE II.D.1

PORTION OF THE PLANNING AREA	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	ALTERNATIVE E	PREFERRED ALTERNATIVE
<b>Umiat Recreation Site LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing. ■In cooperation with the State, establish Umiat primitive campsite/air park and trail.	■Available to oil and gas leasing. ■In cooperation with the State, establish Umiat primitive campsite/air park and trail.	■Available to oil and gas leasing. ■In cooperation with the State, establish Umiat primitive campsite/air park and trail.	■Available to oil and gas leasing. ■In cooperation with the State, establish Umiat primitive campsite/air park and trail.	■Available to oil and gas leasing.
<b>Scenic Areas LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing. ■Establish VRM Class I on the Colville River.*	■Available to oil and gas leasing. ■Establish VRM Class II on the upper Colville River. ■Establish VRM Class III on the lower Colville River, including Umiat.*	■Available to oil and gas leasing. ■Establish VRM Class II on the upper Colville River. ■Establish VRM Class III on the lower Colville River, including Umiat.*	■Available to oil and gas leasing. ■Establish VRM Class II on the upper Colville River. ■Establish VRM Class III on the lower Colville River, including Umiat.*	■Available to oil and gas leasing. ■Establish VRM Class I on the upper Colville River. ■Establish VRM Class II on the lower Colville River*
<b>Pik Dunes LUEA</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing. ■Recommend the Secretary of the Interior add the dunes to the Teshekpuk Lake Special Area.	■Available to oil and gas leasing. ■Recommend the Secretary of the Interior add the dunes to the Teshekpuk Lake Special Area.	■Available to oil and gas leasing. ■Recommend the Secretary of the Interior add the dunes to the Teshekpuk Lake Special Area.	■Available to oil and gas leasing. ■Recommend the Secretary of the Interior add the dunes to the Teshekpuk Lake Special Area.	■Available to oil and gas leasing. ■Recommend the Secretary of the Interior add the dunes to the Teshekpuk Lake Special Area.
<b>Ikpikpuk Paleontological Sites</b>	■Unavailable to oil and gas leasing.	■Unavailable to oil and gas leasing. ■Recommend the Secretary of the Interior establish a Special Area on the Ikpiupuk River.	■Available to oil and gas leasing except the portion within the Teshekpuk Lake Caribou Habitat LUEA. ■Recommend the Secretary of the Interior establish a Special Area on the Ikpiupuk River.	■Available to oil and gas leasing. ■Recommend the Secretary of the Interior establish a Special Area on the Ikpiupuk River.	■Available to oil and gas leasing. ■Recommend the Secretary of the Interior establish a Special Area on the Ikpiupuk River.	■Available to oil and gas leasing.
<b>Kuukpik Corporation Entitlement LUEA</b>	■Unavailable to oil and gas leasing.	■Deferred from oil and gas leasing until Kuukpik Corporation's entitlement has been conveyed.	■Available to oil and gas leasing. ■Escrow royalties.	■Available to oil and gas leasing. ■Escrow royalties.	■Available to oil and gas leasing. ■Escrow royalties.	■Available to oil and gas leasing.

TABLE II.D.1

PORTION OF THE PLANNING AREA	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	ALTERNATIVE E	PREFERRED ALTERNATIVE
<b>Potential Colville Wild and Scenic River LUEA</b>	<ul style="list-style-type: none"> <li>■Unavailable to oil and gas leasing.</li> <li>■Make no recommendation for WSRS designation.</li> </ul>	<ul style="list-style-type: none"> <li>■Unavailable to oil and gas leasing.</li> <li>■Recommend as a component of the WSRS to be managed as a "wild" river area.</li> <li>■Establish VRM Class I.*</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> <li>■Recommend as a component of the WSRS to be managed as a "scenic" river area.</li> <li>■Establish VRM Class II on upper portion.</li> <li>■Establish VRM Class III on lower portion.*</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> <li>■Recommend as a component of the WSRS to be managed as a "recreational" river area.</li> <li>■Establish VRM Class II on upper portion.</li> <li>■Establish VRM Class III on lower Colville River.*</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> <li>■Find the river to be unsuitable as a component of the WSRS.</li> <li>■Establish VRM Class II on upper Colville River.</li> <li>■Establish VRM Class III on lower portion.*</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> <li>■Establish VRM Class I on the upper Colville River.</li> <li>■Establish VRM Class II on the lower Colville River*</li> </ul>
<b>Other Federal lands</b>	<ul style="list-style-type: none"> <li>■Unavailable to oil and gas leasing.</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> </ul>	<ul style="list-style-type: none"> <li>■Available to oil and gas leasing.</li> </ul>

Stipulations listed in Section II.C.7 will protect important surface resources by restricting where, when, and how certain activities, including oil and gas exploration and development, can occur. The scope of stipulations increases between Alternative A and Alternative E as the resources potentially impacted by oil and gas leasing increase. The stipulations for the Preferred Alternatives include revisions suggested during the comment period.

Winter seismic operations throughout the planning area would be allowed under all alternatives, except that Alternative A contains two options, one allowing seismic and one prohibiting it.

\*Visual Resource Management classes are described in Appendix H.

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**Table II.D-2**

**Comparisons of Impacts for  
Alternatives A, B, C, D, and E,  
and the Preferred Alternative  
for the  
National Petroleum Reserve — Alaska  
Planning Area  
Integrated Activity Plan/  
Environmental Impact Statement**

Soils  
Paleontological Resources  
Water Resources  
Water Quality  
Air Quality  
Vegetation  
Fish Resources  
Birds  
Mammals — Terrestrial  
Mammals — Marine  
Endangered and Threatened Species  
Economy  
Cultural Resources  
Subsistence-Harvest Patterns  
Sociocultural Systems  
Coastal Zone Management  
Recreational and Visual Resources

The summaries presented in this table are based on the comprehensive analysis in Sections IV.B, C, D, E, F, and G, of an Integrated Activity Plan that includes potential oil and gas lease sales in the planning area; these summaries are based on the initial oil and gas lease sale which was the focus of the analysis.

SOILS		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Soil stability depends closely on vegetative cover; where vegetation is disturbed, impacts on soils follow. Impacts to soils from management actions under Alternative A would involve either disturbance or destruction of relatively small areas. The duration of these impacts may be short term, ranging from several years if the vegetation is disturbed and up to many decades if the soils are destroyed. The overall impact to soils of the 4.6 million acre planning area would be minor (with seismic) to negligible (without seismic).</p>	<p><b>First Sale:</b> Areas of impacts and losses of soils from all activities are similar to those areas discussed under Vegetation (Sec. IV.C.6). More site-specific conclusions will follow project design and detailed soil survey.</p>	<p><b>First Sale:</b> Estimated areas of impacts and losses of soils from all activities are similar to those areas discussed under Vegetation.</p>
	<p><b>Multiple Sales:</b> Areas of impacts and losses of soils from all activities in multiple sales are similar to those areas discussed under Vegetation (Sec. IV.C.6).</p>	<p><b>Multiple Sales:</b> Areas of impacts and losses of soils from all activities in multiple sales would be similar to those areas discussed under Vegetation (Sec. IV.D.6).</p>
PALEONTOLOGICAL RESOURCES		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Under Alternative A, impacts to paleontological resources would result from management activities other than oil and gas exploration (except seismic activity) and development. Impacts would include displacement and/or destruction of resources and would be minimal whether or not seismic activity is allowed.</p>	<p><b>First Sale:</b> Under Alternative B, impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative A. Impacts would include displacement and/or destruction of resources and would be minimal whether or not seismic activity is allowed. Under Alternative B, the potential impacts to paleontological resources from oil and gas exploration and development may be the same as or only slightly increased from the impacts from activities other than oil and gas under Alternative A.</p>	<p><b>First Sale:</b> Under Alternative C, the probability of impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature but may be somewhat increased in magnitude over Alternative B. Under Alternative C, most of the impacts to paleontological resources would result from oil and gas exploration and development. When compared with Alternative B, the potential for impacts to paleontological resources may range from similar under Alternative A to somewhat greater under Alternative C.</p>
	<p><b>Multiple Sales:</b> Under Alternative B, potential impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative A, but the probability of impacts occurring might increase. Under Alternative B, the potential impacts to paleontological resources from oil and gas exploration and development would increase dramatically compared to Alternative A, because only seismic activities would be permitted under Alternative A.</p>	<p><b>Multiple Sales:</b> Under Alternative C, potential impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative B, but the probability of impacts occurring would increase. Under Alternative C, the potential impacts to paleontological resources from oil and gas exploration and development would increase by roughly 20 percent compared to Alternative B.</p>

SOILS		
Alternative D	Alternative E	Preferred Alternative
<b>First Sale:</b> Estimated areas of impacts and losses of soils from all activities are similar to those areas discussed under Vegetation (Sec. IV.E.6).	<b>First Sale:</b> Estimated areas of impacts and losses of soils from all activities are similar to those areas discussed under Vegetation (Sec. IV.F.6).	<b>First Sale:</b> Soil stability depends closely on vegetative cover; where vegetation is disturbed, impacts on soils follow. All activities under the Preferred Alternative must disturb the least possible amount of surface area and vegetation; Stipulation 68 always must be complied with. Emphasis is on maintaining the thermal properties of the existing vegetation and surface organic mat or substituting other thermal insulation. Impacts to soils from management actions under the Preferred Alternative would involve either disturbance or destruction of relatively small areas. The duration of these impacts may be short term, ranging from several years if the vegetation is disturbed, and up to many decades if the soils are destroyed. Relatively, the overall impact to soils in the planning area is expected to be a small fraction of the total of more than 4 million acres in the entire planning area. The area of impacted soils would be similar to that of disturbed vegetation (see Vegetation, Sec. IV.G.6, for acreage details). More site-specific conclusions will follow project design and detailed soil survey.
<b>Multiple Sales:</b> Areas of impacts and losses of soils from all activities in multiple sales are similar to those areas discussed under Vegetation (Sec. IV.E.6).	<b>Multiple Sales:</b> Areas of impacts and losses of soils from all activities in multiple sales are similar to those areas discussed under Vegetation (Sec. IV.F.6).	<b>Multiple Sales:</b> Areas of impacts and losses of soils from all activities in multiple sales would be similar to those areas discussed under Vegetation (Sec. IV.G.6).
PALEONTOLOGICAL RESOURCES		
Alternative D	Alternative E	Preferred Alternative
<b>First Sale:</b> Under Alternative D, impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature but may be significantly increased in magnitude over Alternative B. Under Alternative D, most of the impacts to paleontological resources would result from oil and gas exploration and development. When compared with Alternative B, the potential for impact to paleontological resources would be significantly greater under Alternative D.	<b>First Sale:</b> Alternative E opens all of the planning area to oil and gas leasing. Under Alternative E, impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature but may be significantly increased in magnitude over Alternative B.	<b>First Sale:</b> Under the Preferred Alternative, impacts to vertebrate paleontological resources from management activities other than oil and gas exploration and development would be minimal. Most of the potential impacts to vertebrate paleontological resources would result from oil and gas exploration and development activities and have already been discussed.
<b>Multiple Sales:</b> Under Alternative D, potential impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative B, but the probability of impacts occurring would increase. Under Alternative D, the potential impacts to paleontological resources from oil and gas exploration and development would increase by at least 300 percent compared to Alternative B.	<b>Multiple Sales:</b> Under Alternative E, potential impacts to paleontological resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative B, but the probability of impacts occurring would increase. Under Alternative E, the potential impacts to paleontological resources from oil and gas exploration and development would increase by at least 400 percent compared to Alternative B.	<b>Multiple Sales:</b> The types and nature of impacts to vertebrate paleontological resources resulting from multiple lease sales are the same as described for a single sale. The potential impacts to vertebrate paleontological resources from management activities other than oil and gas exploration and development would be similar in nature to what has been mentioned previously; however, the probability of impacts occurring may increase with multiple sales. As a result of multiple sales, the potential impacts to vertebrate paleontological resources from oil and gas exploration and development could increase severalfold.

WATER RESOURCES		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Impacts to water resources under Alternative A would be minimal and of short duration, except for minor diversions of shallow water tracks and limited ponding in places where seismic track depression compresses the organic mat. While these depressions may persist for years after the conclusion of the activity, their effect over the whole planning area, as defined by events of such magnitude, extent, and duration to create the effects discussed in Sec. IV.C.3 is not significant. Without seismic activity impacts to water resources would be negligible</p>	<p><b>First Sale:</b> The impacts of activities other than oil and gas exploration and development under Alternative B are expected to be similar to those under Alternative A. The potential long-term impacts of oil and gas development activities on the water resources in the planning area include disturbance of stream banks or shorelines and subsequent melting of permafrost (thermokarst) and blockages of natural channels and floodways that disrupt drainage patterns. The potential short-term impacts, primarily during construction, would increase erosion and sedimentation and water removal from riverine pools and lakes. While any surface-disturbing activity could affect water resources, the potential adverse effects of Alternative B, because it excludes the critical lake and river habitat from leasing, while significant, would be the least of all the leasing options.</p>	<p><b>First Sale:</b> The impacts of activities other than oil and gas exploration and development under Alternative C are expected to be similar to those under Alternative A (and similar to those under Alternative B). The potential long-term impacts (melting of permafrost and disrupting drainage patterns) and short-term impacts (increasing erosion and sedimentation and removing water from riverine pools and lakes) of oil and gas exploration and development on the water resources in the planning area is expected to be greater for Alternative C than for Alternative B.</p>
	<p><b>Multiple Sales:</b> Adverse impacts from multiple lease sales may be up to several times greater than a single sale, while indirect impacts may take years to develop. Shared infrastructure could reduce the adverse effects to water resources of multiple lease sales, because combined facilities require less water for construction, maintenance, and camp use than separate, independent facilities.</p>	<p><b>Multiple Sales:</b> Adverse impacts from multiple lease sales may be up to several times greater than a single sale, while indirect impacts may take years to develop. Shared infrastructure could reduce the adverse effects to water resources of multiple lease sales, because combined facilities require less water for construction, maintenance, and camp use than separate, independent facilities. Where infrastructure is not shared, both long and short-term impacts, and recovery times could increase.</p>
WATER QUALITY		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Long-term water quality over a total of less than a fraction of an acre would be affected by biannual 2-D seismic programs under Alternative A. Without seismic activity impacts to water quality would be negligible</p>	<p><b>First Sale:</b> Longer-term (decade-or-more) effects of Alternative B would occur over a few hundred acres, versus a negligible amount for Alternative A because of the introduction of oil and gas activities construction or placement of ice roads. Oil spills could result in waters of about six ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality.</p>	<p><b>First Sale:</b> Effects under Alternative C are similar to those in Alternative B for oil and gas activities, and similar to those for Alternative A for activities other than oil and gas. Water quality over a few hundred acres could be affected by construction or placement of ice or gravel roads, and other structures. Oil spills could result in waters of up to seven ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality.</p>
	<p><b>Multiple Sales:</b> Longer-term (decade-or-more) effects of multiple sales would be similar to those for a single sale. Oil spills could result in waters of about eight ponds or small lakes remaining toxic to sensitive species for about 7 years.</p>	<p><b>Multiple Sales:</b> Longer-term (decade-or-more) effects of multiple sales would be slightly greater than for a single sale. Oil spills could result in waters of up to nine ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality</p>

WATER RESOURCES		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> The impacts of activities other than oil and gas exploration and development under Alternative D are expected to be similar to those under Alternative B and C. The potential long-term impacts (melting of permafrost, and disrupting drainage patterns) and short-term impacts (increasing erosion and sedimentation and removing water from riverine pools and lakes) of oil and gas exploration and development on the water resources in the planning is expected to be greater for Alternative D than for Alternatives B and C.</p>	<p><b>First Sale:</b> The impacts of activities other than oil and gas exploration and development under Alternative E are expected to be similar to those under Alternative A (and similar to those under Alternatives B, C, and D). The potential long-term impacts (melting of permafrost and disrupting drainage patterns) and short-term impacts (increasing erosion and sedimentation and removing water from riverine pools and lakes) of oil and gas exploration and development on the water resources in the planning is expected to be greater for Alternative E than for Alternatives B, C, and D.</p>	<p><b>First Sale:</b> The impacts of activities other than oil and gas exploration and development under the Preferred Alternative are expected to be similar to those under Alternative A. The potential long-term impacts of oil and gas development activities on the water resources in the planning area include disturbance of stream banks or shorelines and subsequent melting of permafrost (thermokarst) and blockages of natural channels and floodways that disrupt drainage patterns. The potential short-term impacts, primarily during construction, would increase erosion and sedimentation and water removal from riverine pools and lakes. While any surface-disturbing activity could affect water resources, the potential adverse effects of the Preferred Alternative, because it has a restricted leasing area and surface occupancy limitations that excludes the critical lake and river habitat from leasing or occupancy, these effects, while significant, could be minimized.</p>
<p><b>Multiple Sales:</b> Adverse impacts from multiple lease sales may be up to several times greater than a single sale, while indirect impacts may take years to develop. Shared infrastructure could reduce the adverse effects to water resources of multiple lease sales, because combined facilities require less water for construction, maintenance, and camp use than separate, independent facilities. Where infrastructure is not shared, both long and short-term impacts, and recovery times could increase.</p>	<p><b>Multiple Sales:</b> Adverse impacts from multiple lease sales may be up to several times greater than a single sale, while indirect impacts may take years to develop. Shared infrastructure could reduce the adverse effects to water resources of multiple sales, because combined facilities require less water for construction, maintenance, and camp use than separate, independent facilities. Where infrastructure is not shared, both long and short-term impacts, and recovery times could increase.</p>	<p><b>Multiple Sales:</b> Adverse impacts from multiple lease sales may be up to several times greater than a single sale, while indirect impacts may take years to develop. Shared infrastructure could reduce the adverse effects to water resources of multiple lease sales, because combined facilities require less water for construction, maintenance, and camp use than separate, independent facilities. Where infrastructure is not shared, both long and short-term impacts, and recovery times could increase.</p>
WATER QUALITY		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Effects under Alternative D are higher than in Alternative B for oil and gas activities. Effects for activities other than oil and gas are similar to those for Alternative A. Water quality up to 2,000 acres could be affected by construction or placement of ice or gravel roads and other structures. Oil spills could result in waters of up to 13 ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality.</p>	<p><b>First Sale:</b> Effects of oil and gas activities in Alternative E would be higher than in Alternative B. Effects of other activities would be similar to those in Alternative A. Long-term water quality over &gt;3,000 acres could be affected by construction or placement of gravel roads, and other structures. Oil spills could result in waters of up to 18 ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality. Tankering of oil is projected to result in a most likely number of zero to one spills <math>\geq 1,000</math> bbl along multiple TAPS tanker routes. Such a spill would contaminate receiving water over several tens of square miles to levels above chronic criteria but below acute criteria.</p>	<p><b>First Sale:</b> Longer-term (decade-or-more) effects of this alternative would occur over a few hundred acres because of the introduction of oil and gas activities construction or placement of ice roads. Oil spills could result in waters of about one to seven ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality.</p>
<p><b>Multiple Sales:</b> Longer-term (decade-or-more) effects of multiple sales would slightly greater than for a single sale. Oil spills could result in waters of up to 27 ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality. A spill along the TAPS tanker route could contaminate receiving water over several tens of square miles to levels above chronic criteria but below acute criteria.</p>	<p><b>Multiple Sales:</b> Longer term (decade-or-more) effects of multiple sales would be one-third greater than for a single sale. Oil spills could result in waters of up to 36 ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality. The <math>\leq 2</math> most likely number of tanker spills along TAPS routes could individually contaminate receiving water over several tens of square nautical miles to levels above chronic criteria but below acute criteria.</p>	<p><b>Multiple Sales:</b> Longer-term (decade-or-more) effects of multiple sales would be similar to those for a single sale. Oil spills could result in waters of up to 10 ponds or small lakes remaining toxic to sensitive species for about 7 years. Water quality could be degraded over a few weeks along a short stretch of the Colville from a 325-bbl spill. The spreading of a similar-sized spill over about 60 acres of Teshekpuk Lake (0.03% of the lake surface) for a few weeks could be considered an effect on water quality.</p>

AIR QUALITY		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Air quality would not be affected by air-impacting actions within the planning area under Alternative A whether or not seismic activity is allowed.</p>	<p><b>First Sale:</b> Activity associated with Alternative B would result in a small, localized increase in the concentrations of criteria pollutants. Concentrations would be within the PSD Class II limits and National Air Quality Standards. Therefore, effects from Alternative B would be low. Effects of activities other than oil and gas are negligible, as in Alternative A.</p>	<p><b>First Sale:</b> The impacts of oil and gas activities under Alternate C would be similar to those under Alternative B. Annually, air quality would be affected by drilling and construction activities at levels less than the PSD criteria. Effects of activities other than oil and gas are negligible, as in Alternative A.</p>
	<p><b>Multiple Sales:</b> Activities associated with multiple sales would result in sequential effects which would remain small and localized. Concentrations would remain within the PSD Class II limits and effects would remain low.</p>	<p><b>Multiple Sales:</b> Activities associated with multiple sales would result in sequential effects which would remain small and localized. Concentrations would remain within the PSD Class II limits and effects would remain low.</p>

AIR QUALITY		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Effects of oil and gas activities under Alternative D are similar to those under Alternative C. Annually, air quality would be affected by drilling and construction activities at levels less than the PSD criteria. Effects of activities other than oil and gas are negligible, as in Alternative A.</p>	<p><b>First Sale:</b> Effects of oil and gas activities under Alternative E would be similar to those under Alternative D. Annually, air quality would be affected by drilling and construction activities at levels less than the PSD criteria. Effects of activities other than oil and gas would be negligible, the same as under Alternative A.</p>	<p><b>First Sale:</b> Activity associated with the Preferred Alternative would result in a small, localized increase in the concentrations of criteria pollutants. Concentrations would be within the PSD Class II limits and National Air Quality Standards. Therefore, effects from the Preferred Alternative would be low. Effects of activities other than oil and gas are negligible, as in Alternative A.</p>
<p><b>Multiple Sales:</b> Activities associated with multiple sales would result in sequential effects which would remain small and localized. Concentrations would remain within the PSD Class II limits and effects would remain low.</p>	<p><b>Multiple Sales:</b> Activities associated with multiple sales would result in sequential effects which would remain small and localized. Concentrations would remain within the PSD Class II limits and effects would remain low.</p>	<p><b>Multiple Sales:</b> Activities associated with multiple sales would result in sequential effects which would remain small and localized. Concentrations would remain within the PSD Class II limits and effects would remain low.</p>

VEGETATION		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Impacts to vegetation from management actions under Alternative A would involve either disturbance or destruction. If the option allowing seismic exploration is implemented, seismic work would account for most (&gt;95%) of those impacts. The duration of all impacts would be short term, ranging up to 5 months, and complete recovery could vary from 1 year to decades. The overall impact to the vegetation communities of the 4.6-million-acre planning area would be minor (with seismic) to negligible (without seismic).</p>	<p><b>First Sale:</b> Impacts to vegetation from activities other than oil exploration and development under Alternative B would be the same as those under Alternative A, except that the effects of archaeological excavation might increase from 1 to 2 acres. The impacts of oil exploration would include vegetation disturbance on about 7,350 acres per year from 2-D seismic work and 0 to 92,120 acres from 3-D surveys. About 17 percent of the disturbance from 2-D would be medium to high, with perhaps 20 percent at that level for 3-D. After 9 years, recovery would be about 90 percent for 2-D seismic work and probably somewhat less for 3-D. Exploration activities also would result in minor vegetation destruction and alteration from the construction of exploration well collars that would be permanent. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of one pump station within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 0 to 180 acres and the alteration in plant species composition of another 0 to 280 acres, for a total of effects over 0 to 460 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery would be moot. Oil spills are inevitable during exploration and development and would affect 0.0 to 2.6 acres of vegetation within the planning area. Spills would be cleaned up immediately, would cause minor ecological damage, and ecosystems would be likely to recover in a few years to 2 decades.</p>	<p><b>First Sale:</b> Impacts to vegetation from activities other than oil exploration and development under Alternative C would be the same as those under Alternative A, except that the effects of archaeological excavation might increase from 1 to 4 acres. The impacts of oil exploration and development would be of the same types as for Alternative B but greater in areal extent. The maximum acreage affected by 3-D seismic surveys would increase from 0 to 92,000 acres to 46,000 to 138,000 acres. The combined effect of development activities would cause the destruction of vegetation on 140 to 320 acres rather than 0 to 180 acres and the alteration in plant species composition of another 220 to 500 acres instead of 0 to 280 acres, for a total of effects over 360 to 820 acres rather than 0 to 460 acres. Finally, the occurrence of oil spills would increase, affecting 0.5 to 3.0 acres instead of 0.5 to 2.6 acres, but the probability of a blowout would remain low.</p>
	<p><b>Multiple Sales:</b> The impacts of oil exploration would include more vegetation disturbance from seismic work than under a single-sale scenario, but the extended period of time over which it would occur, coupled with the recovery time for disturbed areas, would result in only a small increase in the amount of disturbance that would be evident at any one time. Exploration activities also would result in 0.02 to 0.2 acres of permanent vegetation destruction around well collars and alteration of 0.1 to 0.7 acres around ice pads. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of one pump station within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 0 to 320 acres and the alteration in plant species composition of another 0 to 500 acres, for a total of effects over 0 to 820 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery would be moot. Oil spills would affect 0.0 to 3.7 acres of vegetation within the planning area. Recovery from spills would take a few years to two decades.</p>	<p><b>Multiple Sales:</b> The impacts of oil exploration would include more vegetation disturbance from seismic work than under a single-sale scenario, but the extended period of time over which it would occur, coupled with the recovery time for disturbed areas, would result in a small increase in the amount of disturbance that would be evident at any one time. Exploration activities also would result in 0.05 to 0.2 acres of permanent vegetation destruction around well collars and alteration of 0.2 to 0.8 acres around ice pads. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of one pump station within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 140 to 460 acres and the alteration in plant species composition of another 220 to 720 acres, for a total of effects over 360 to 1,180 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery would be moot. Oil spills would affect 0.8 to 4.2 acres of vegetation within the planning area. Recovery from spills would take a few years to two decades. The probability of a blowout would remain low.</p>

VEGETATION		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Impacts to vegetation from activities other than oil exploration and development under Alternative D would be the same as those under Alternative A, except that the effects of archaeological excavation might increase from 1 to 5 acres. The impacts of oil exploration and development would be of the same types as for Alternative B, but greater in areal extent. The maximum acreage affected by 3-D seismic surveys would increase from 0 to 92,000 acres to 92,000 to 322,000 acres. The combined effect of development activities would cause the destruction of vegetation on 140 to 600 acres rather than 0 to 180 acres and the alteration in plant species composition of another 220 to 940 acres instead of 0 to 280 acres, for a total of effects over 360 to 1,540 acres rather than 0 to 460 acres. Finally, the occurrence of spills would increase, affecting 1.4 to 6.0 acres instead of 0.5 to 2.6 acres, but the probability of a blowout would remain low.</p>	<p><b>First Sale:</b> Impacts to vegetation from activities other than oil exploration and development under Alternative E would be the same as those under Alternative A, except that the effects of archaeological excavation might increase from 1 to 6 acres. The impacts of oil exploration and development would be of the same types as for Alternative B, but greater in areal extent. The maximum acreage affected by 3-D seismic surveys would increase from 0 to 92,000 acres to 92,000 to 460,000 acres. The combined effect of development activities would cause the destruction of vegetation on 140 to 780 acres rather than 0 to 180 acres and the alteration in plant species composition of another 220 to 1,220 acres instead of 0 to 280 acres, for a total of effects over 360 to 2,000 acres rather than 0 to 460 acres. Finally, the occurrence of oil spills would increase, and the probability of a seawater pipeline spill would also increase.</p>	<p><b>First Sale:</b> Impacts to vegetation from activities other than oil exploration and development under the Preferred Alternative would involve either disturbance or destruction. Since they would involve a very small fraction of the 4.6-million-acre planning area, the overall impact to vegetation communities would be minor to negligible. The impacts of oil exploration would include vegetation disturbance on about 7,350 acres per year from 2-D seismic work and 46,000 to 138,000 acres from 3-D surveys over the entire exploration period. About 17 percent of the disturbance from 2-D would be medium to high, with perhaps 20 percent at that level for 3-D. After 9 years, recovery would be about 90 percent for 2-D seismic work and probably somewhat less for 3-D. Exploration activities also would result in minor vegetation destruction and alteration from the construction of exploration well collars that would be permanent. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of one pump station within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 140 to 320 acres and the alteration in plant species composition of another 220 to 500 acres, for a total of effects over 360 to 820 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery thus would be moot. Oil spills are inevitable during exploration and development and would affect 0.7 to 3.1 acres of vegetation within the planning area. Spills would be cleaned up immediately, would cause minor ecological damage, and ecosystems would be likely to recover in a few years to 2 decades. Overall, the impacts of the Preferred Alternative would be very similar to those of Alternative C.</p>
<p><b>Multiple Sales:</b> The impacts of oil exploration would include more vegetation disturbance from seismic work than under a single-sale scenario, but the extended period of time over which it would occur, coupled with the recovery time for disturbed areas, would result in a small increase in the amount of disturbance that would be evident at any one time. Exploration activities would also result in 0.1 to 0.5 acres of permanent vegetation destruction around well collars and alteration of 0.6 to 2.0 acres around ice pads. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of one pump station within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 280 to 1,020 acres and the alteration in plant species composition of another 440 to 1,600 acres, for a total of effects over 720 to 2,620 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery thus would be moot. Oil spills would affect 2.7 to 12.0 acres of vegetation within the planning area. Recovery from spills would take a few years to 2 decades. The probability of a blowout would remain low.</p>	<p><b>Multiple Sales:</b> The impacts of oil exploration would include more vegetation disturbance from seismic work than under a single-sale scenario, but the extended period of time over which it would occur, coupled with the recovery time for disturbed areas, would result in a small increase in the amount of disturbance that would be evident at any one time. Exploration activities would also result in 0.2 to 0.6 acres of permanent vegetation destruction around well collars and alteration of 0.7 to 2.7 acres around ice pads. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of up to two pump stations within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 280 to 1,480 acres and the alteration in plant species composition of another 440 to 2,320 acres, for a total of effects over 720 to 3,800 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery thus would be moot. Oil spills would affect 3.7 to 16.0 acres of vegetation within the planning area. Recovery from spills would take a few years to 2 decades.</p>	<p><b>Multiple Sales:</b> The impacts of oil exploration would include more vegetation disturbance from seismic work than under a single-sale scenario, but the extended period of time over which it would occur, coupled with the recovery time for disturbed areas, would result in only a small increase in the amount of disturbance that would be evident at any one time. Exploration activities also would result in 0.1 to 0.2 acres of permanent vegetation destruction around well collars and alteration of 0.3 to 1.0 acres around ice pads. The activities of oil field development that would impact vegetation include construction of gravel pads, roads, and airstrips for each oil field; potential construction of one pump station within the planning area; excavation of material sites; and construction of pipelines. The combined effect of these activities would cause the destruction of vegetation on 140 to 460 acres and the alteration in plant species composition of another 220 to 720 acres, for a total of effects over 360 to 1,180 acres. The duration of these impacts would be permanent, assuming that the gravel pads would remain after oil production ends, and recovery thus would be moot. Oil spills would affect 0.9 to 7.4 acres of vegetation within the planning area. Recovery from spills would take a few years to two decades. Overall, the impacts of the Preferred Alternative would be very similar to those of Alternative C.</p>

FISH RESOURCES		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Seismic surveys, if allowed, and fuel spills are not expected to have a measurable effect on arctic fish populations in the planning area over the life of the IAP.</p>	<p><b>First Sale:</b> Based on the discussion in the text, fuel spills associated with Alternative B are expected to have a similar effect on arctic fish populations as discussed for Alternative A. Seismic surveys, construction related activities (drill pads, roads, airstrips, pipelines, and gravel extraction); and fuel, oil, and seawater spills associated with Alternative B are not expected to have a measurable effect on arctic fish populations in the planning area over the production life of the field.</p>	<p><b>First Sale:</b> The effect of fuel spills on arctic fish populations in Alternative C are expected to be similar to Alternative A. The individual effects of seismic surveys, construction related activities, and oil and seawater spills are expected to be similar to that of Alternative B. However, the likelihood of their occurrence is estimated to be roughly two to three times higher for Alternative C than for Alternative B. Depending on the actual level and location of implementation, this could result in a corresponding increase in the overall effect of these activities on arctic fish populations in Alternative C over that of Alternative B.</p>
	<p><b>Multiple Sales:</b> Seismic surveys and pipelines associated with multiple sales are expected to have the same overall effect on arctic fish populations as the first sale. Gravel pads are expected to have about twice the effect as the first sale. Fuel and oil spills are likely to have a greater effect on arctic fish populations than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater effects than estimated herein for multiple sales.</p>	<p><b>Multiple Sales:</b> Seismic surveys and pipelines associated with multiple sales are expected to have the same overall effect on arctic fish as the first sale. Gravel pads are expected to have about twice the effect as the first sale. Fuel and oil spills are likely to have a greater effect on arctic fish populations than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater effects than estimated herein for multiple sales.</p>

FISH RESOURCES		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> The effect of fuel spills on arctic fish populations in Alternative D are expected to be similar to Alternative A. The individual effects of seismic surveys, construction related activities, and oil and seawater spills are expected to be similar to that of Alternative B. However, the likelihood of their occurrence is estimated to be roughly four to five times higher for Alternative D than for Alternative B. Depending on the actual level and location of implementation, this could result in a corresponding increase in the overall effect of these activities on arctic fish populations in Alternative D over that of Alternative B.</p>	<p><b>First Sale:</b> The effect of fuel spills on arctic fish populations in Alternative E are expected to be similar to Alternative A. The individual effects of seismic surveys, construction-related activities, and oil and seawater spills are expected to be similar to that of Alternative B. However, the likelihood of their occurrence is estimated to be roughly five to six times higher for Alternative E than for Alternative B. Depending on the actual level and location of implementation, this could result in a corresponding increase in the overall effect of these activities on arctic fish populations in Alternative E over that of Alternative B.</p>	<p><b>First Sale:</b> Based on the assumptions discussed in the text, seismic surveys, construction (drill pads, roads, airstrips, pipelines, and gravel extraction); and fuel, oil, and seawater spills associated with the Preferred Alternative are not expected to have a measurable effect on arctic fish populations, and would be similar to that of Alternative C.</p>
<p><b>Multiple Sales:</b> Seismic surveys and pipelines associated with multiple sales are expected to have the same overall effect on arctic fish as the first sale. Gravel pads are expected to have about twice the effect as the first sale. Fuel and oil spills are likely to have a greater effect on arctic fish than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater effects than estimated herein for multiple sales.</p>	<p><b>Multiple Sales:</b> Seismic surveys and pipelines associated with multiple sales are expected to have the same overall effect on arctic fish as the first sale. Gravel pads are expected to have about twice the effect as the first sale. Fuel and oil spills are likely to have a greater effect on arctic fish than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater effects than estimated herein for multiple sales.</p>	<p><b>Multiple Sales:</b> Seismic surveys, pipelines, and seawater pipeline spills are expected to have the same overall effect on arctic fish as the first sale. Gravel pads, gravel extraction, and fuel and oil spills are expected to have a slightly greater effect on arctic fish populations than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater oil spill related effects than estimated herein for multiple sales.</p>

## BIRDS

Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Under Alternative A, most disturbance effects associated with ground transport and seismic surveys in winter, moderate flight frequency supporting large and small camps and aerial surveys, moderate increases of boat traffic on the Colville River, air transport of recreational parties, and spill-cleanup activities in summer, are expected to be localized, to within 700 ft to 0.6 mi of the disturbing activity, and temporary, ranging from brief (&lt;1 day) in the case of response to a few aircraft flights or presence of ground or boat activity to several months for extended ground-transport operations. Elimination of seismic activity would result in a minor decrease of disturbance effects on 3 winter-resident species. More intense activity, such as routine overflights of goose-molting lakes, the combination of large camp activity and associated aircraft operations, substantially increased river-boat traffic, or fuel spills entering lakes with large molting goose populations, is expected to result in more substantial losses, but recovery of lost productivity and recruitment may not be detectable above the natural fluctuations of the population and survey methods/data available.</p> <p>If seismic surveys are not allowed there should be a small decrease in impacts to birds which winter in the area including ptarmigan, gyrfalcons and snowy owls.</p>	<p><b>First Sale:</b> Under Alternative B, most disturbance effects not associated with oil and gas activities are expected to be similar to those discussed for Alternative A, although lost productivity of nesting species and decreased survivorship of molting birds may not be detectable above the natural fluctuations of the population. Most raptors exposed to such activities at distances &lt; 1 mi exhibit minor behavioral changes and &gt; 1 mi experience no apparent effect or reduced productivity. Overall effect of aircraft operations supporting oil and gas activities, and most other activities causing disturbance, on productivity or recruitment of bird populations in the vicinity of drill sites is expected to be localized and minor, but likewise may not be detectable above the natural fluctuations of the population. Losses attributed to predators attracted to sites may be substantial but is difficult to quantify. Displacement of nesting birds from gravel structures and pits is expected to have primarily minor local effects on productivity because displaced individuals are likely to use adjacent undisturbed habitats.</p> <p>As a result of their small average size, onshore oil spills reaching aquatic habitats are expected to cause losses of tens of individuals, but the effect of such losses may not be detectable above the natural fluctuations of the population. An oil spill at a well within 2 miles of the coast is expected to have similar effects as other onshore spills; it is unlikely to enter the marine environment.</p> <p>Because overall effects of management actions on birds in the Northeast NPR-A area are expected to be minor, effects on stakeholder groups also are expected to be minor.</p>	<p><b>First Sale:</b> Effects of actions other than oil and gas activity under Alternative C are expected to be essentially the same as for Alternative B, except in the Colville River corridor, where increased activity would result in greater effects. Effects of oil and gas activity are not expected to be significantly different than discussed for Alternative B.</p> <p>As a result of their small average size, onshore oil spills reaching aquatic habitats are expected to cause losses of tens of individuals, but the effect of such losses may not be detectable above the natural fluctuations of the population. A crude-oil spill from an offshore site in the marine environment during August or September could contact loons and flocks of Brant, Oldsquaw, and/or eiders staging in protected coastal habitats or waters farther offshore. Some broodrearing, molting, or staging Brant, Canada Geese, Snow Geese, Oldsquaw, King Eiders, and Common Eiders could be contacted in coastal habitats. Mortality of molting Oldsquaw could be substantial, but the effect would be difficult to determine due to an uncertain population status. Because of an apparently declining population, substantial King Eider mortality could be significant. Also, several thousand shorebirds could encounter oil in shoreline habitats. A spill that enters open water off river deltas in spring, or nearshore areas in fall, could contact migrant loons and eiders.</p>

BIRDS		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Effects of actions other than oil and gas activity under Alternative D are expected to be essentially the same as for Alternative B, except in the Colville River corridor where increased activity would result in substantially greater effects. Effects of oil and gas activity are expected to be 2-3x greater than discussed for Alternative B; this does not represent a significantly greater effect for any species. As a result of their small average size, onshore oil spills reaching aquatic habitats are expected to cause losses of tens of individuals, but the effect of such losses may not be detectable above the natural fluctuations of the population.</p> <p>A crude-oil spill from an offshore site in the marine environment during August or September could contact loons and flocks of brant, oldsquaw, and/or eiders staging in protected coastal habitats or waters farther offshore. Some broodrearing, molting, or staging Brant, Canada Geese, Snow Geese, Oldsquaw, King Eiders, and Common Eiders could be contacted in coastal habitats. Mortality of molting Oldsquaw could be substantial, but the effect would be difficult to determine due to an uncertain population status. Because of an apparently declining population, substantial King Eider mortality could be significant. Also, several thousand shorebirds could encounter oil in shoreline habitats. A spill that enters open water off river deltas in spring, or nearshore areas in fall, could contact migrant loons and eiders.</p>	<p><b>First Sale:</b> Effects of actions other than oil and gas activity under Alternative E are expected to be essentially the same as for Alternative B (minor), except in the Goose Molting Habitat LUEA where increased activity could result in greater effects. Effects of routine oil and gas activities are expected to be substantially greater than discussed for Alternative B as a result of offering this LUEA for lease. Long-term effects on molting populations are uncertain because long-term studies have not been done.</p> <p>Oil spill effects are expected to be considerably greater than under Alternative B because of the potential for a spill entering a lake occupied by molting geese. However, because the location of facilities and activities relative to bird concentrations is speculative, the potential effect is difficult to determine. As a result of their small average size, onshore oil spills reaching aquatic habitats are expected to cause losses of tens of individuals, but potentially 100's of individuals could be killed by cumulative total mortality from many small spills. The effect of such losses may not be detectable above the natural fluctuations of the population.</p> <p>A fuel-oil spill from a barge or a crude-oil spill from an offshore site during August or September could contact loons and large flocks of brant, oldsquaw, and/or eiders staging in protected coastal habitats or waters farther offshore. Effects on individual birds would be the same as described for Alternative B. Some broodrearing, molting, or staging Brant, Canada Geese, Snow Geese, Oldsquaw, King Eiders, and Common Eiders could contact oil in protected coastal habitats or waters farther offshore. Mortality of molting Oldsquaw could be substantial, but the effect would be difficult to determine due to their uncertain population status. Because of an apparently declining population, substantial King Eider mortality could be significant. Common eiders, nesting on barrier islands and along the coastal, could be contacted by a marine spill. Also, several thousand shorebirds could encounter oil in shoreline habitats. A spill that enters open water off river deltas in spring, or nearshore areas in fall, could contact migrant loons and eiders.</p> <p>Raptors are expected to experience minor effects under this alternative.</p>	<p><b>First Sale:</b> Under the Preferred Alternative, most disturbance effects not associated with oil and gas activities are expected to be localized and temporary, ranging from brief (&lt;1 day) in the case of response to a few aircraft flights or presence of ground or boat activity to several months for extended ground-transport operations, although lost productivity decreased survivorship of nesting species is not likely to be detectable above the natural fluctuations of the population. Although more intense activity, such as the combination of large camp activity and associated aircraft operations, substantially increased river-boat traffic, fuel spills entering lakes with substantial waterfowl populations, or potential attraction of predators to these sites is expected to result in more substantial losses, population-level effects still would be considered minor. Even with greater losses in the latter circumstances, recovery of lost productivity and recruitment probably will not be detectable above the natural fluctuations of the population. Fuel spills are expected to be contained and cleaned up while on gravel structures. Losses of tens of individuals are expected if a fuel spill of the small estimated average size enters a lake populated with molting waterfowl. Most raptors exposed to disturbance factors at distances <math>\leq 1/2</math> mi are expected to exhibit minor behavioral changes.</p> <p>Overall effect of aircraft operations supporting oil and gas activities, and most other activities causing disturbance, on productivity or recruitment of bird populations in the vicinity of drill sites is expected to be localized and minor and may not be detectable above the natural fluctuations of the population. Displacement of nesting birds from gravel structures and pits is expected to have primarily minor local effects on productivity, because displaced individuals may use undisturbed habitats, although probably with variable success. Current data are inadequate for predicting the ultimate effect of this and other disturbance factors for most species and areas. Given the small areas and low-density local populations involved, population-level effects are expected to be minor. Effect of other habitat alterations is expected to be minor except in the proximity of roads, where populations of most nesting species are likely to decline. As a result of their small average size, oil spills reaching aquatic habitats are expected to cause losses of tens of individuals, but the effect of such losses is not likely to be detectable above the natural fluctuations of the population. An oil spill entering Teshekpuk Lake or the Colville River is expected to cause no greater than minor effects on waterfowl and/or raptors. Because overall effects of management actions on birds in the Northeast NPR-A Planning Area are expected to be minor, effects on stakeholder groups also are expected to be minor.</p> <p>Effects under the Preferred Alternative are expected to be <b>a) significantly greater</b> than effects under Alternative A; <b>b) slightly greater</b> than effects under Alternative B; <b>c) less</b> than effects under Alternative C; <b>d) considerably less</b> than effects under Alternative D; <b>e) significantly less</b> than under Alternative E.</p>

BIRDS		
Alternative A	Alternative B	Alternative C
	<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alteration is expected to double in the southern half of the planning area under Alternative B with multiple sales, but still not significantly affect coastal plain populations. Increases in oil and refined oil spills are expected to result in the loss of small numbers of birds but the loss is not likely to be detectable above the natural fluctuations of the population and survey methods/data available. Overall effect is expected to increase somewhat from that discussed for the first sale.</p>	<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alteration is expected to increase over the southern three-quarters of the planning area under Alternative C with multiple sales, but not significantly affect planning area populations. Increases in oil and refined oil spills are expected to result in the loss of small numbers of birds but the loss is not likely to be detectable above the natural fluctuations of the population and survey methods/data available. Overall effect is expected to increase somewhat from that discussed for the first sale.</p>

BIRDS		
Alternative D	Alternative E	Preferred Alternative
<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alteration or loss is expected to increase in developed areas that may occur in most of the planning area under Alternative D with multiple sales, substantially changing planning area local bird population levels and/or distribution. Increases in oil and refined oil spills are expected to result in greater loss of numbers of birds than under the first sale, but these losses are not likely to be detectable above the natural fluctuations of the population and survey methods/data available. Overall effect is expected to increase substantially from that discussed for the first sale.</p>	<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alteration or loss is expected to increase substantially where development and production facilities are located. This could occur in numerous portions of the planning area if multiple sales are held, potentially altering local populations in these areas and for species that appear more vulnerable to habitat changes or disturbance (e.g., loons, molting geese) effects could extend to regional populations and involve long-term changes in distribution. However, most effects that are likely to occur throughout the planning area are expected to be short-term and minor. Increases in oil and refined oil spills are expected to result in the loss of substantial numbers of birds, but these losses and recovery of cumulative lost productivity and recruitment may not be detectable above the natural fluctuations of the population and survey methods/data available. Overall effect is expected to increase substantially from that discussed for the first sale.</p>	<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alteration is expected to increase slightly in the southern two-thirds of the planning area under the Preferred Alternative with multiple sales but still not significantly affect coastal plain populations. Increases in crude and refined oil spills are expected to result in the loss of small numbers of birds that is not likely to be detectable above the natural fluctuations of the population and survey methods/data available. Overall effect is expected to increase somewhat from that discussed for the first sale.</p>

TERRESTRIAL MAMMALS		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> The effects of Alternative A, other than seismic operations, on terrestrial mammals are expected to be local, within about 1 to 2 km of activities, and short term, with no significant adverse effects on mammal populations (except the arctic fox, which may increase in abundance near permanent camp facilities). Seismic operations also would have short-term and local effects on terrestrial mammals but would not affect populations or overall distribution.</p>	<p><b>First Sale:</b> For activities other than oil and gas, air traffic, humans on foot, and the presence of resource-inventory-survey camps are expected to increase under Alternative B as compared to Alternative A, but these activities are not expected to affect terrestrial mammal populations. For oil and gas activities, the level of effects from noise, disturbance, and habitat alteration is expected to increase in the southern half of the planning area. Increased habitat alteration would include the development of one oil field and a pipeline to the TAPS. Caribou of the CAH and TLH are expected to be disturbed and their movements delayed along the pipeline during periods of aircraft overflights (e.g., to inspect the pipeline), but these disturbances are not expected to affect migrations and overall distribution. Near oil field facilities, surface, air, and foot traffic is expected increase under Alternative B and to displace some caribou, moose, muskoxen, grizzly bears, wolves, and wolverines but not significantly affect Arctic Slope populations. The number of small, chronic crude-oil and fuel spills and a potential spill contacting Teshekpuk Lake or reaching the Colville River are expected to result in the loss of small numbers of terrestrial mammals, with recovery expected within about 1 year. Trenching and burial of pipelines at river crossings would have very local effects on tundra and riparian vegetation and would not significantly affect terrestrial mammal habitats.</p>	<p><b>First Sale:</b> For activities other than oil and gas, the effects of Alternative C are expected to be similar to those of Alternative A. For oil and gas activities, effects of Alternative C are expected to be somewhat greater than those of Alternative B. Increased habitat alteration would include the development of one or two oil fields and a pipeline to the TAPS. Some CAH and TLH caribou are expected to be disturbed and their movements delayed along the pipeline during periods of air traffic, but these disturbances are not expected to affect caribou migrations and overall distribution. Near the oil fields, surface, air, and foot traffic is expected to increase and to displace some terrestrial mammals but not significantly affect Arctic Slope populations. The number of small, chronic crude-oil and fuel spills, including a potential oil spill contacting Teshekpuk Lake or the Colville River, are expected to result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year. Trenching for and burial of pipelines at river crossings would have very local effects on tundra and riparian vegetation and would not significantly affect terrestrial mammal habitats. Under Alternative C, some terrestrial mammals could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A in Harrison Bay in a small area south of Atigaru Point (Figure II.C.1-3). Effects of these activities would be local and are not likely to affect terrestrial mammal populations.</p>
	<p><b>Multiple Sales:</b> The level of effects due to noise, disturbance, and habitat alteration is expected to increase in the southern half of the planning area under Alternative B with multiple sales. Near oil field facilities, surface, air, and foot traffic are expected increase and to displace some caribou, moose, muskoxen, grizzly bears, wolves, and wolverines, but not significantly affect Arctic Slope populations. The number of small, chronic crude-oil and fuel spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within about 1 year.</p>	<p><b>Multiple Sales:</b> Effects of oil and gas activities under multiple sales are expected to be somewhat greater than those of Alternative C under the first sale. Surface, air, and foot traffic near the oil fields is expected to increase and to displace some terrestrial mammals but not significantly affect Arctic Slope populations. The number of small, chronic crude-oil and fuel spills is expected to increase somewhat and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year.</p>

TERRESTRIAL MAMMALS		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Activities other than oil and gas are expected to increase somewhat under Alternative D as compared to Alternative A, but the increase is not expected to affect terrestrial mammal populations. For oil and gas activities, effects of Alternative D are expected to be significantly greater than those of Alternative B, with more helicopter disturbance of caribou and other terrestrial mammals. Increased habitat alteration would include the development of one to four oil fields and a pipeline to the TAPS. Some CAH and TLH caribou are expected to be disturbed and their movements delayed along the pipeline during periods of air traffic. Near the oil fields, surface, air, and foot traffic are expected to increase and to displace some terrestrial mammals, but not significantly affect Arctic Slope populations. If a field is developed in the area south and west of Teshekpuk Lake, some TLH caribou calving is expected to be displaced within 1.86 to 2.48 mi (3-4 km) of roads and other production facilities over the life of the project. The number of small, chronic crude-oil and fuel spills including a potential oil spill contacting Teshekpuk Lake or the Colville River, are likely to result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 to 2 years. Trenching for and burial of pipelines at river crossings would have very local effects on tundra and riparian vegetation and would not significantly affect terrestrial mammal habitats.</p> <p>Under Alternative D, some terrestrial mammals could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A in Harrison Bay from about Kogru Inlet south to a small area south of Atigaru Point (Figure II.C.1-4). Effects of these activities would be local and are not likely to affect terrestrial mammal populations.</p>	<p><b>First Sale:</b> other than oil and gas are expected to increase somewhat under Alternative E compared to Alternative A, but the increase is not expected to affect terrestrial-mammal populations. For oil and gas activities, effects of Alternative E are expected to be significantly greater than those of Alternative B, with more helicopter disturbance of caribou and other terrestrial mammals. Increased habitat alteration would include the development of one to five oil fields and a pipeline to the TAPS. Some CAH and TLH caribou are expected to be disturbed and their movements delayed along the pipeline during periods of air traffic. Near the oil fields, surface, air, and foot traffic is expected to increase significantly and to displace some terrestrial mammals but not significantly affect Arctic Slope populations. If a field is developed in TLH caribou-calving areas, some calving is expected to be displaced within 1.86 to 2.48 mi (3-4 km) of roads and other production facilities over the life of the project. The number of small, chronic crude-oil and fuel spills including a potential oil spill contacting Teshekpuk Lake or the Colville River, are expected to result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year. Trenching for and burial of pipelines at river crossings would have very local effects on tundra and riparian vegetation and wouldn't significantly affect terrestrial mammal habitats.</p> <p>Under Alternative E, some terrestrial mammals could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A (Fig. II.C.1-4). Effects of these activities would be local and are not likely to affect terrestrial mammal populations.</p>	<p><b>First Sale:</b> For activities other than oil and gas, air traffic, humans on foot, and the presence of resource-inventory-survey camps are expected to be local, within about 1 to 2 km of activities, and short term, with no significant adverse effects on mammal populations (except the arctic fox, which may increase in abundance near permanent camp facilities). For oil and gas activities, caribou of the CAH, WAH, and TLH could be temporarily disturbed and their movements delayed along the pipeline during periods of air overflights, but these disturbances are not expected to affect migrations and overall distribution and habitat use. The TLH caribou calving and migration movements in the Teshekpuk Lake area would not be affected by leasing under the Preferred Alternative. Near oil field facilities south of Teshekpuk Lake, surface, air, and foot traffic would temporarily displace some caribou, moose, muskoxen, grizzly bears, wolves, and wolverines but not significantly affect Arctic Slope populations. Small, chronic crude-oil and fuel spills and a potential spill contacting Teshekpuk Lake or reaching the Colville River might result in the loss of small numbers of terrestrial mammals, with recovery expected within about 1 year.</p> <p>Trenching for and burial of pipelines at river crossings would have very local effects on tundra and riparian vegetation and would not significantly affect terrestrial mammal habitats.</p> <p>Under the Preferred Alternative, some terrestrial mammals could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A in Harrison Bay in a small area south of Atigaru Point (Fig. II.C.1). Effects of these activities would be local and are not likely to affect terrestrial mammal populations.</p>
<p><b>Multiple Sales:</b> The effect of multiple sales under Alternative D is expected to result in an increase in the amount of displacement of calving TLH caribou within 1.86 to 2.48 mi (3-4 km) of field roads assumed to be built between production pads south of Teshekpuk Lake. This effect is expected to persist over the life of the oil fields and may reduce productivity and abundance of the TLH caribou. Some increase in the impedance of TLH caribou movements to insect-relief areas along the coast, north of Teshekpuk Lake is expected under multiple sales. The number of small, chronic crude- and fuel-oil spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year.</p>	<p><b>Multiple Sales:</b> The effect of multiple sales under Alternative E is expected to result in an increase in the amount of displacement of calving TLH caribou within 1.86 to 2.48 mi (3-4 km) of within-field roads. This effect is expected to persist over the life of the oil fields and may reduce productivity and abundance of the TLH. Some increase in the impedance of TLH caribou movements to insect relief areas along the coast, north of Teshekpuk Lake is expected under multiple sales. The number of small, chronic crude-oil and fuel spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year.</p>	<p><b>Multiple Sales:</b> Surface, air, and foot traffic near the oil fields is expected to increase and to displace some terrestrial mammals but not significantly affect Arctic Slope populations. The number of small, chronic crude-oil and fuel spills is expected to increase somewhat and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year.</p>

## MARINE MAMMALS

Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> The effects of Alternative A, other than seismic operations, on marine mammals, particularly polar bears and seals, along the coast of the planning area are expected to be local and to occur within about 1 mi of resource-inventory-survey activities, survey and recreational camps, and overland moves. These effects are expected to be short term, with no significant adverse effects on the populations as a whole. Seismic operations occurring near the coast could disturb a few polar bear dens, displacing the bears, and may adversely affect the survival of cubs; however, this level of effect is not likely to be significant to the population.</p>	<p><b>First Sale:</b> For marine mammals, the effects of activities other than oil and gas under Alternative B are expected to be similar to those under Alternative A—local and short term, with no significant adverse effects to the populations as a whole. The effects of oil and gas activities for Alternative B are expected to increase somewhat over those of Alternative A. However, most oil and gas activities under Alternative B are expected to occur inshore and far to the south of the coast. Only a small increase in potential noise and disturbance effects is expected along the coast, primarily in the Colville River Delta-inner Harrison Bay area, and these effects are expected to be local and short term (generally &lt;1 year). A small number of seals and no more than a few polar bears might be adversely affected or killed by a 325-bbl crude-oil spill contacting the Colville River and some of the oil reaching marine waters, but these losses wouldn't be significant to marine mammal populations.</p>	<p><b>First Sale:</b> For marine mammals under Alternative C, the effects of activities other than oil and gas are expected to be similar to those for Alternative A; the effects of oil and gas activities are expected to increase slightly over the effects for Alternative B.</p>
	<p><b>Multiple Sales:</b> Multiple sales under Alternative B are expected to have similar effects to those under Alternative B with one sale, i.e., local and short term, with no significant adverse effects to marine mammal populations as a whole.</p>	<p><b>Multiple Sales:</b> The effect of oil and gas activities under Alternative C with multiple sales is expected to increase slightly over those effects for Alternative B with multiple sales.</p>

MARINE MAMMALS		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> For marine mammals, the effects of activities other than oil and gas under Alternative D are expected to be similar to those under Alternative A—local and short term, with no significant adverse effects to the populations as a whole. The effects of oil and gas activities for Alternative D are expected to increase over the effects of Alternative B. Although most of the increase in human activities associated with oil exploration and development is expected to occur inshore, south of the coast, some increase in potential noise and disturbance effects are expected to occur in the Colville River Delta-southern Harrison Bay area. A small number of seals and no more than a few polar bears might be adversely affected or killed by a 325-bbl crude-oil spill contacting the Colville River and some of the oil reaching marine waters but, these losses would not be significant to marine mammal populations. Under Alternative D, seals and polar bears could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A in Harrison Bay from about Kogru Inlet south to a small area south of Atigaru Point (Figure II.C.1-4). Effects of these activities would be local and are not likely to affect marine mammal populations.</p>	<p><b>First Sale:</b> For marine mammals, the effects of activities other than oil and gas under Alternative E are expected to be similar to those under Alternative A—local and short term, with no significant adverse effects to the populations as a whole. The effects of oil and gas activities for Alternative E are expected to increase over the effects of Alternative B. Although most of the increase in human activities associated with oil exploration and development is expected to occur inshore, south of the coast, some increase in potential noise and disturbance and oil pollution effects is expected to occur along the coast. A small number of seals and no more than a few polar bears might be adversely affected or killed by a 325-bbl crude-oil spill contacting the Colville River, but these losses would not be significant to marine mammal populations. Under Alternative E, seals and polar bears could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A (Fig. II.C.1-4). Effects of these activities would be local and are not likely to affect marine mammal populations.</p>	<p><b>First Sale:</b> For the Preferred Alternative, the effects of activities other than oil and gas are expected to be on marine mammals, particularly polar bears and seals, along the coast of the planning area and are expected to be local and occur within about 1 mi of resource-inventory-survey activities, survey and recreational camps, and overland moves. The effects of oil and gas activities are expected to result in a small increase in potential noise and disturbance along the coast, primarily in the Colville River Delta-inner Harrison Bay area, and these effects are expected to be local and short term (generally &lt;1 year). Under the Preferred Alternative, seals and polar bears could be affected by possible oil exploration offshore from an ice island and subsequent oil development on the coast of the NPR-A in Harrison Bay in a small area south of Atigaru Point (Fig. II.C.1). Effects of these activities would be local and are not likely to affect marine mammal populations.</p> <p>A small number of seals and no more than a few polar bears might be adversely affected or killed by a 325-bbl crude-oil spill contacting the Colville River, but these losses would not be significant to marine mammal populations. The effects of the Preferred Alternative are expected to be short term, with no significant adverse effects on marine mammal populations.</p>
<p><b>Multiple Sales:</b> Multiple sales under Alternative D are expected to have effects similar to those under Alternative D with the first sale, i.e., local and short term, with no significant adverse effects to marine mammal populations as a whole.</p>	<p><b>Multiple Sales:</b> Multiple sales under Alternative E are expected to have similar effects to those under Alternative E in the first sale, i.e., local and short term, with no significant adverse effects to marine mammal populations as a whole.</p>	<p><b>Multiple Sales:</b> Conclusion—Multiple Sales: The effect of oil and gas activities under the Preferred Alternative with multiple sales is expected to be about the same as for the single sale, but the duration and extent of activities would be over a longer period of time, as would potential disturbance effects.</p>

## ENDANGERED AND THREATENED SPECIES

Potential effect common to all Alternatives: Disturbance, depending on the nature and duration of the disturbance, could be considered a "take" under the ESA.

Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Bowhead whales are not likely to be affected by activities associated with the management plan. Overall, the effects on spectacled and Steller's eiders exposed to noise-producing activities are expected to be minimal. Eiders breeding, nesting, or rearing young in coastal habitats or other areas within the planning area may be overflowed by support aircraft and may experience temporary, nonlethal effects, probably lasting less than an hour. Eiders affected by activities associated with hazardous- and solid-material removal and remediation may be affected for as long as 4 weeks. Because of the relatively low density of eiders in the planning area, substantial disturbance is not expected to occur and is likely to be limited to within a few kilometers of the activities. Such short-term and localized disturbances are not expected to cause significant population effects. However, disturbance of some individuals over the life of the project is expected to be unavoidable.</p> <p>Seismic activities are unlikely to have an impact on the threatened and endangered species.</p>	<p><b>First Sale:</b> Overall, bowhead whales exposed to noise-producing activities such as marine vessel traffic and possibly aircraft overflights most likely would experience temporary, nonlethal effects. Bowheads may exhibit temporary avoidance behavior in response to vessel and aircraft activities. In general, bowheads do not appear to travel more than a few kilometers in response to a single disturbance incident. Behavioral changes as a result of exposure to vessel or aircraft traffic likely will last only a few minutes after the disturbance has left the area or the whales have passed. Overall, spectacled and Steller's eiders are not expected to be exposed to most noise-producing activities from oil and gas operations. Any effects from exposure likely would be minimal. Spectacled and Steller's eiders breeding, nesting, or rearing young in coastal habitats may be overflowed by support aircraft and may experience temporary, nonlethal effects, probably lasting less than an hour. In the central portion of the planning area, Steller's eiders occasionally may be overflowed by support aircraft, disturbed by noise from drilling or vehicular traffic during development/production activities in the summer, or affected by oil-spill-cleanup activities and may experience temporary, nonlethal effects lasting probably less than an hour but possibly continuing all summer in the case of summer drilling operations. It is unlikely that the primary Alaskan nesting area, located south and southeast of Barrow, would be affected much by these activities; so significant disturbance of nesting or broodrearing eiders is not expected to occur. Improper containment or disposal of refuse at support camps could attract potential bird predators. It is possible that an increase in predators could result in the loss of eggs, chicks, or even adult eiders. Some eiders may be affected by activities associated with the management plan other than oil and gas activities, such as hazardous- and solid-material removal and remediation and summer aircraft flights over sensitive areas. Nesting females and their broods may experience temporary, nonlethal effects as a result of these activities. Such short-term and localized disturbances are not expected to cause significant population effects. However, disturbance of some individuals over the life of the project is expected to be unavoidable.</p>	<p><b>First Sale:</b> The potential effects on bowhead whales from discharges, noise and disturbance, and oil spills are expected to be essentially the same under this alternative as under Alternative B. The potential effects on spectacled and Steller's eiders from discharges, noise and disturbance, seawater spills, and oil spills associated with oil and gas activities are expected to be essentially the same under this alternative as under Alternative B. However, there may be an increase in potential effects on eiders from activities other than oil and gas activities associated with the management plan due to an increase in summertime aircraft flights over sensitive areas that may affect nesting females and their broods. Under this alternative, there would be an increase in the number of aircraft flights for aerial wildlife surveys and other aerial surveys. Aerial wildlife surveys in late June and early July increase from 14 days to 21 days. Spectacled and Steller's eiders breeding, nesting, or rearing young in the coastal areas may be overflowed by support aircraft and may experience temporary, nonlethal effects lasting probably less than an hour. In the central portion of the planning area, Steller's eiders occasionally may be overflowed by support aircraft and may experience temporary, nonlethal effects lasting probably less than an hour. It is unlikely that the primary Alaskan nesting area, located south and southeast of Barrow, would be affected much by these activities; so significant disturbance of nesting or broodrearing eiders is not expected to occur. Such short-term and localized disturbances are not expected to cause significant population effects. However, disturbance of some individuals over the life of the project is expected to be unavoidable.</p>

## ENDANGERED AND THREATENED SPECIES

Potential effect common to all Alternatives: Disturbance, depending on the nature and duration of the disturbance, could be considered a "take" under the ESA.

Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> The potential effects on bowhead whales from discharges, noise and disturbance, seawater spills, and oil spills are expected to be essentially the same under this alternative as under Alternative B. The potential effects on spectacled and Steller's eiders from discharges, some noise and disturbance, and oil spills associated with oil and gas activities are expected to be essentially the same under this alternative as under Alternative B. Some mortality of spectacled eiders could occur if spilled oil managed to reach Teshekpuk Lake, although eiders appear to be present in low densities during the breeding season. Little information is available for the rest of the season. Most spectacled eider breeding and nesting areas are protected under this alternative, because no oil and gas activities are permitted in most of the sensitive area. Some eiders in the area open to oil and gas activities may experience temporary, nonlethal effects as a result of increased aircraft traffic, vessel traffic, and perhaps drilling of development and production wells and oil-spill-cleanup activities. Some Steller's eider breeding and nesting areas also would be protected under this alternative, although some eiders in the remainder of the planning area may experience some noise and disturbance as a result of oil and gas activities and may experience temporary, nonlethal effects lasting probably less than an hour but possibly continuing all summer in the case of summer drilling operations. There also may be an increase in potential effects on eiders from activities associated with the management plan other than oil and gas activities, due to an increase in summertime aircraft flights over sensitive areas, that may affect nesting females and their broods. Under this alternative there would be an increase in the number of aircraft flights for aerial wildlife surveys and other aerial surveys. Aerial wildlife surveys in late June and early July increase from 14 days to 21 days. Spectacled and Steller's eiders breeding, nesting, or rearing young in coastal habitats may be overflown by support aircraft and may experience temporary, nonlethal effects lasting probably less than an hour. In the central portion of the planning area, Steller's eiders may occasionally be overflown by support aircraft and may experience temporary, nonlethal effects lasting probably less than an hour. It is unlikely that the primary Alaskan nesting area, located south and southeast of Barrow, would be affected much by these activities; so significant disturbance of nesting or broodrearing eiders is not expected to occur. Such short-term and localized disturbances are not expected to cause significant population effects. However, disturbance of some individuals over the life of the project is expected to be unavoidable.</p>	<p><b>First Sale:</b> The potential effects on bowhead whales from discharges, noise and disturbance, and oil spills are expected essentially to be the same under this alternative as under Alternative B. Some whales exposed to a fuel-oil spill could experience one or more of the following: skin contact, baleen fouling, respiratory distress caused by inhalation of hydrocarbon vapors, localized reduction in food resources, consumption of some contaminated prey items, and perhaps a temporary displacement from some feeding areas. The number of whales contacted would depend on the size, timing, and duration of the spill; the density of the whale population in the area of the spill; and the whales' ability or inclination to avoid contact with the spilled fuel oil. Some eiders exposed to a fuel-oil spill may suffer mortality as a result of hypothermia while others may ingest fuel oil from preening of oiled feathers and be prone to various pathological conditions such as endocrine dysfunction, liver-function impairment, and weight loss. The potential effects on spectacled and Steller's eiders from discharges, some noise and disturbance, seawater spills, and oil spills associated with oil and gas activities are expected essentially to be the same under this alternative as under Alternative B. Some spectacled and Steller's eiders in the planning area may be exposed to oil and gas activities and may experience temporary, nonlethal effects as a result of increased aircraft traffic, vessel traffic, and perhaps drilling of development and production wells and oil-spill-cleanup activities. There also may be an increase in potential effects on eiders from activities other than oil and gas associated with the management plan due to an increase in summertime aircraft flights over sensitive areas that may affect nesting females and their broods. Under this alternative, there would be an increase in the number of aircraft flights for aerial wildlife surveys and other aerial surveys. Aerial wildlife surveys in June and July increase from 14 days to 21 days. Spectacled and Steller's eiders breeding, nesting, or rearing young in coastal habitats may be overflown by support aircraft and may experience temporary, nonlethal effects. In the central portion of the planning area, Steller's eiders occasionally may be overflown by support aircraft and may experience temporary, nonlethal effects. It is unlikely that the primary Alaskan nesting area, located south and southeast of Barrow, would be affected much by these activities; so significant disturbance of nesting or broodrearing eiders is not expected to occur. Such short-term and localized disturbances are not expected to cause significant population effects. However, disturbance of some individuals over the life of the project is expected to be unavoidable.</p>	<p><b>First Sale:</b> Bowhead whales are not likely to be affected by activities associated with the management plan. Overall, bowhead whales exposed to noise-producing activities such as marine vessel traffic and possibly aircraft overflights most likely would experience temporary, nonlethal effects. Bowheads may exhibit temporary avoidance behavior in response to vessel and aircraft activities. In general, bowheads do not appear to travel more than a few kilometers in response to a single disturbance incident. Behavioral changes as a result of exposure to vessel or aircraft traffic likely will last only a few minutes after the disturbance has left the area or the whales have passed. Overall, the effects on spectacled and Steller's eiders exposed to noise-producing activities are expected to be minimal. Spectacled eiders breeding, nesting, or rearing young in the Spectacled Eider Breeding Range west of Teshekpuk Lake and Steller's eiders breeding, nesting, or rearing young in the central portion of the planning area may be disturbed by support aircraft, noise from drilling or vehicular traffic during development/production activities in the summer, or affected by oil-spill-cleanup activities. These eiders may experience temporary, nonlethal effects, probably lasting less than an hour but possibly continuing all summer, in the case of aircraft and drilling associated with summer operations. Significant disturbance of nesting or broodrearing eiders is not expected to occur. Some mortality of spectacled eiders could occur if spilled oil managed to reach Teshekpuk Lake, although eiders appear to be present in low densities during the breeding season. Small onshore oil spills are not likely to significantly affect eiders. If a fuel-oil spill occurred in marine waters while eiders were present, some mortality would likely occur as a result of hypothermia. Some eiders could ingest fuel oil from preening of oiled feathers and be prone to various pathological conditions such as endocrine dysfunction, liver-function impairment, weight loss, etc. Improper containment or disposal of refuse at support camps could attract potential bird predators. It is possible that an increase in predators could result in the loss of eggs, chicks, or even adult eiders. Overall, spectacled and Steller's eiders are not expected to be exposed to most noise-producing activities from oil and gas operations. Any effects from exposure likely would be minimal.</p> <p>Some eiders may be affected by activities other than oil and gas, such as hazardous- and solid-material removal and remediation and summer aircraft flights over sensitive areas. Nesting females and their broods may experience temporary, nonlethal effects as a result of these activities. Disturbance of some individuals over the life of the project is expected to be unavoidable. Due to the relatively low density of eiders in the planning area, substantial disturbance is not expected to occur and is likely to be temporary and limited to within a few kilometers of the activities. Such short-term and localized disturbances are not expected to cause significant population effects. Disturbance, depending on its nature and duration, could be considered a "take" under the ESA. Stipulations should provide some protection to eiders during the conduct of some of these activities.</p> <p>Overall, the effects of the Preferred Alternative are expected to be essentially the same as Alternative D.</p>

ENDANGERED AND THREATENED SPECIES		
Alternative A	Alternative B	Alternative C
	<p><b>Multiple Sales:</b> Effects of multiple sales are expected to be essentially as described above for the first sale. Bowhead whales exposed to noise-producing activities such as marine-vessel traffic and possibly aircraft overflights most likely would experience temporary, nonlethal effects. Spectacled and Steller's eiders are not expected to be exposed to most noise-producing activities from oil and gas operations, and any effects from exposure likely would be minimal. The assumptions that oil spills would be relatively small in size, that the majority of the spills would occur on pads, and that small areas would be affected where spills occur off the pads would remain the same as for the first sale. Therefore, the effects of multiple sales and increased potential for noise-producing activities and oil spills on endangered and threatened species at the resource ranges and activity levels described are expected to be essentially the same as described for the single sale.</p>	<p><b>Multiple Sales:</b> The effects of multiple sales and increased potential for noise-producing activities and oil spills on endangered and threatened species at the resource ranges and activity levels described are expected to be essentially the same as described above for the first sale.</p>

ENDANGERED AND THREATENED SPECIES		
Alternative D	Alternative E	Preferred Alternative
<p><b>Multiple Sales:</b> The effects of multiple sales and increased potential for noise-producing activities and oil spills on endangered and threatened species at the resource ranges and activity levels described are expected to be essentially the same as described above for the first sale.</p>	<p><b>Multiple Sales:</b> effects of multiple sales and increased potential for noise-producing activities and oil spills on endangered and threatened species at the resource ranges and activity levels described are expected to be essentially the same as described above for the single sale.</p>	<p><b>Multiple Sales:</b> Effects of multiple sales are expected to be essentially as described above for the first sale. Bowhead whales exposed to noise-producing activities such as marine-vessel traffic and possibly aircraft overflights most likely would experience temporary, nonlethal effects. Spectacled and Steller's eiders are not expected to be exposed to most noise-producing activities from oil and gas operations, and any effects from exposure likely would be minimal. The assumptions that oil spills would be relatively small in size, that the majority of the spills would occur on pads, and that small areas would be affected where spills occur off the pads would remain the same as for the first sale. Therefore, the effects of multiple sales and increased potential for noise-producing activities and oil spills on endangered and threatened species at the resource ranges and activity levels described are expected to be essentially the same as described above for the single sale.</p>

ECONOMY		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> For activities other than oil and gas exploration and development for Alternative A, generating approximately 50 jobs for 4½ months associated with seismic surveys and recreation-field employment, which is equal to one person working 4 months per year. For oil and gas exploration and development activities for Alternative A, there would be no economic effects.</p>	<p><b>First Sale:</b> For activities other than oil and gas exploration and development, Alternative B would generate approximately 50 jobs for 4½ months associated with seismic surveys and recreation employment, equivalent to one person working 8 months per year. For oil and gas exploration and development activities, production under Alternative B is projected to generate increases above the levels of Alternative A as follows: NSB property taxes, 0 to 2 percent (\$0-\$3 million); direct oil-industry employment, 0 to 700 (5 times this in additional jobs) residing in Southcentral Alaska; NSB resident employment, 0 to 2 percent; annual revenues of \$0 to \$0.75 million property tax to the State; \$4 to \$37 million royalty to the Federal Government; \$4 to \$37 million royalty to the State and the NSB; and \$6 to 62 million severance tax to the</p>	<p><b>First Sale:</b> For activity other than oil and gas, Alternative C would generate approximately 50 jobs for 4½ months associated with seismic surveys and recreation-field employment, which is equal to one person working 8 months per year. Activities other than oil and gas would have no effect; production in Alternative C is projected to generate increases above the levels of Alternative B as follows: NSB property taxes, 1 percent (\$1-\$2 million); direct oil-industry employment, 200 to 500 during production (5x this in additional jobs) residing in Southcentral Alaska; NSB resident employment, 1 percent; and annual revenues of \$0.25 to \$0.5 million property tax to the State, \$0 to \$6 million royalty to the Federal Government, \$0 to \$6 million royalty to the State and NSB, and \$1 to \$11 million severance tax to the State.</p>
	<p><b>Multiple Sales:</b> The effect of multiple sales for Alternative B is projected to be approximately two times that of Alternative B.</p>	<p><b>Multiple Sales:</b> The effect of multiple sale for Alternative C is project to be approximately two times that of the first sale for Alternative C.</p>
CULTURAL RESOURCES		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Under Alternative A, impacts to cultural resources would result from management activities other than oil and gas exploration (except seismic activity) and development. Impacts would include displacement and or destruction of resources and would be minimal. Adopting the no seismic option would reduce these impacts slightly because above-ground structures would be at reduced risk.</p>	<p><b>First Sale:</b> Under Alternative B, impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature to but of an increased magnitude from those of Alternative A. Impacts would include displacement and or destruction of resources and would be minimal. Adopting the no seismic option would reduce there impacts slightly because above ground structures would be at reduced risk. Under Alternative B, most of the potential impacts to cultural resources would result from oil and gas exploration and development.</p>	<p><b>First Sale:</b> Under Alternative C, impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature but may be somewhat increased in magnitude over Alternative A. Under Alternative C, most of the impacts to cultural resources would result from oil and gas exploration and development, although there is a possibility that no such activities would impact cultural resources sites. When compared with Alternative B, the potential for impact to cultural resources is somewhat greater under Alternative C.</p>
	<p><b>Multiple Sales:</b> Under Alternative B, potential impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative A, but the probability of impacts occurring might increase. Under Alternative B, the potential impacts to cultural resources from oil and gas exploration and development would increase dramatically compared to Alternative A, because only seismic activities are permitted under Alternative A.</p>	<p><b>Multiple Sales:</b> Under Alternative C, potential impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative B, but the probability of impacts occurring would increase. Under alternative C, the potential impacts to cultural resources form oil and gas exploration and development would increase by roughly 20 percent compared to Alternative B.</p>

ECONOMY		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> For activities other than oil and gas exploration and development for Alternative D, approximately 50 jobs for 4½ months associated with seismic surveys and recreation employment equivalent to one person working 8 months per year would be generated. For oil and gas exploration and development activities, production in Alternative D is projected to generate increases above the levels of Alternative B as follows: NSB property taxes, 2 percent (\$4-\$5 million); direct oil-industry employment, 500 (5 times this in additional jobs) residing in Southcentral Alaska; NSB resident employment, 1 to 2 percent; and annual revenues of \$1 to \$1.25 million property tax to the State, \$6 to \$50 million royalty to the Federal Government, \$6 to \$50 million royalty to the State and NSB, and \$11 to \$85 million severance tax to the State.</p>	<p><b>First Sale:</b> Activities other than oil and gas exploration and development for Alternative E would generate recreation-field employment by 22, 1-week long float-trip parties per year (Table II.H.3.b), which is equal to one person working for 6 months each year. For oil and gas exploration and development activities for Alternative E, production in Alternative E is projected to generate increases above the levels of Alternative B as follows: NSB property taxes, 3 to 4 percent (\$6 to \$9 million); direct oil-industry employment, 700 (5 times this in additional jobs) residing in Southcentral Alaska; NSB-resident employment, 2 to 3 percent; and annual revenues of \$1.5 to \$2.25 million property tax to the State, \$10 to \$79 million royalty to the Federal Government, \$10 to \$79 million royalty to the State and NSB, and \$18 to \$134 million severance tax to the State.</p>	<p><b>First Sale:</b> For activities other than oil and gas, the Preferred Alternative would generate approximately 50 jobs for 4½ months associated with seismic surveys and recreation-field employment, which is equal to one person working 8 months per year. Activities other than oil and gas would have no effect; production in the Preferred Alternative is projected to generate increases above the levels of Alternative B as follows: NSB property taxes, 1 percent (\$1-\$2 million); direct oil-industry employment, 200 to 500 during production (5 times this in additional jobs) residing in Southcentral Alaska; NSB resident employment, 1 percent; and annual revenues of \$0.25 to \$0.5 million property tax to the State, \$1 to \$8 million royalty to the Federal Government, \$1 to \$8 million royalty to the State and NSB, and \$3 to \$13 million severance tax to the State.</p>
<p><b>Multiple Sales:</b> The effect of multiple sales for Alternative D is projected to be approximately two times that of the first sale for Alternative D.</p>	<p><b>Multiple Sales:</b> The effect of multiple sales for Alternative E is projected to be approximately two times that of the first sale for Alternative E.</p>	<p><b>Multiple Sales:</b> The effect of multiple sales for the Preferred Alternative is project to be approximately two times that of the first sale for the Preferred Alternative.</p>
CULTURAL RESOURCES		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Under Alternative D, impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature but may be significantly increased in magnitude over Alternative B. Under Alternative D, most of the impacts to cultural resources would result from oil and gas exploration and development, although there is a possibility that no such activities would impact cultural resources sites. When compared with Alternative B, the potential for impact to cultural resources would be significantly greater under Alternative D.</p>	<p><b>First Sale:</b> Alternative E opens all of the planning area to oil and gas leasing. Under Alternative E, impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature but may be significantly increased in magnitude over Alternative A. Under Alternative E, most of the impacts to cultural resources would result from oil and gas exploration and development, although there is a possibility that no such activities (except seismic reconnaissance) would impact cultural resources sites. When compared with Alternative B, the potential for impact to cultural resources would be significantly greater under Alternative E.</p>	<p><b>First Sale:</b> Under the Preferred Alternative impacts to cultural resources from management activities other than oil and gas exploration and development would be minimal. Most of the potential impacts to cultural resources would result from oil and gas exploration and development activities which have already been discussed.</p>
<p><b>Multiple Sales:</b> Under Alternative D, potential impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative B, but the probability of impacts occurring would increase. Under Alternative D, the potential impacts to cultural resources from oil and gas exploration and development would increase by at least 300 percent compared to Alternative B.</p>	<p><b>Multiple Sales:</b> Under Alternative E, potential impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature to Alternative B, but the probability of impacts occurring would increase. Under Alternative E, the potential impacts to cultural resources from oil and gas exploration and development would increase by at least 400 percent compared to Alternative B.</p>	<p><b>Multiple Sales:</b> The types and nature of impacts to cultural resources resulting from multiple lease sales are the same as described for a single sale. The potential impacts to cultural resources from management activities other than oil and gas exploration and development would be similar in nature to what has been mentioned previously, however the probability of impacts occurring may increase with multiple sales. As a result of multiple sales the potential impacts to cultural resources from oil and gas exploration and development could increase several fold.</p>

SUBSISTENCE		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Impacts, other than seismic activity, under Alternative A on subsistence resources range from negligible effects on fish and bowhead whales to short term and local effects on caribou and other terrestrial mammals, birds, and marine mammals. Impacts with seismic activity could displace a few polar bears in dens and affect cub survival but not have a significant effect on the bear population. Short-term and local effects would be expected on caribou and other terrestrial mammals and birds; negligible effects would be expected on arctic fish populations and bowhead whales. Subsistence resources of the communities of Barrow, Atkasuk, and Nuiqsut could be affected periodically from ground-disturbance activities (other than seismic activities) and oil spills, but there would be no apparent effects on subsistence activities.</p>	<p><b>First Sale:</b> Overall effects associated with Alternative B subsistence-harvest patterns in the communities of Barrow, Atkasuk, and Nuiqsut, and other nearby communities from oil and gas activities in the planning area as a result of impacts from disturbance and oil spills are expected to periodically impact subsistence resources, but no resource would become unavailable, undesirable for use, or experience overall population reductions.</p>	<p><b>First Sale:</b> Overall effects associated with Alternative C subsistence-harvest patterns in the communities of Barrow, Atkasuk, and Nuiqsut, and other nearby communities from oil and gas activities in the planning area as a result of impacts from disturbance and oil spills are expected to increase somewhat over Alternative B. Periodic impacts to subsistence resources are expected but no resource would become unavailable, undesirable for use, or experience overall population reductions, essentially the same level of effect as Alternative B.</p>

SUBSISTENCE		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Overall effects associated with Alternative D on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and Nuiqsut, and other nearby communities from oil and gas activities in the planning area as a result of impacts from disturbance and oil spills are expected to increase over Alternative B. Periodic impacts to subsistence resources are expected but no resource would become unavailable, undesirable for use, or experience overall population reductions, and there would be no significant impacts to overall subsistence harvests and harvest patterns.</p>	<p><b>First Sale:</b> Overall effects associated with Alternative E on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and Nuiqsut, and other nearby communities from oil and gas activities in the planning area as a result of impacts from disturbance and oil spills are expected to increase over Alternative B. Periodic impacts to subsistence resources are expected, but no resource would become unavailable, undesirable for use, or experience overall population reductions. Overall, effects are not expected to have significant impacts on subsistence-harvest patterns in Barrow and Atqasuk, although oil-development activity under Alternative E could make Nuiqsut's pursuit of caribou more difficult for at least an entire harvest season.</p>	<p><b>First Sale:</b> Overall effects associated with the Preferred Alternative on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and Nuiqsut, and other nearby communities from oil and gas activities in the planning area as a result of impacts from disturbance and oil spills are expected to periodically impact subsistence resources, but no resource would become unavailable, undesirable for use, or experience overall population reductions. The effects of the Preferred Alternative are expected to be the same as Alternative C.</p>

SUBSISTENCE		
Alternative A	Alternative B	Alternative C
	<p><b>Multiple Sales:</b> Effects from multiple sales to terrestrial mammals are expected to increase, but no significant impacts to populations are anticipated. Disturbance from air, surface, and foot traffic could displace some caribou and other terrestrial mammals. Small numbers of terrestrial mammals would be lost due to the increase of small, chronic crude-oil and fuel spills, but populations are expected to recover within 1 year. Arctic fish populations would experience effects similar to the first sale as high-density fish areas are deferred, but increases are expected if sale intervals are not spaced sufficiently to provide population recovery. Increased disturbance and displacement effects and increased oil-spills risks are expected for birds, but timing of the sales again is critical to recovery. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. Bowhead whales are expected to experience short-term, nonlethal effects. Effects to marine mammals would be short term and local with no adverse effects to populations.</p> <p>Given that resource estimates and development scenarios project an increase in resources and increases in the number of drill pads and pipeline miles, logic would assume increased effects to potentially affected resources, except for the fact that these effects would be spread over 2 decades. The biological analyses expect slight increases in effects with little overall effects to resource populations. Effects associated with multiple sales on subsistence-harvest patterns in the communities of Barrow, Atkasuk, and (especially) Nuiqsut as a result of impacts from disturbance and oil spills are expected to make no subsistence resource unavailable, undesirable for use, or experience overall population reductions.</p>	<p><b>Multiple Sales:</b> Effects from multiple sales to terrestrial mammals are expected to increase but no significant impacts to populations are anticipated. Small numbers of terrestrial mammals would be lost due to the increase of small chronic crude oil and fuel spills, but populations are expected to recover within 1 year. Arctic fish populations would experience effects similar to Alternative B as high-density fish areas are unavailable to leasing, but increases are expected if sale intervals are not spaced sufficiently to provide population recovery. Increased disturbance and displacement effects and increased oil-spill risks are expected for birds, but timing of the sales again is critical to recovery. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. Bowhead whales, as in Alternative B, are expected to experience short-term, nonlethal effects. Effects to marine mammals would be short term and local with no adverse effects to populations.</p> <p>Given that resource estimates and development scenarios project an increase in resources and increases in the number of drill pads and pipeline miles, logic would assume increased effects to potentially affected resources, except for the fact that these effects would be spread over 2 decades. The biological analyses expect slight increases in effects with little overall effect to resource populations. Effects associated with multiple sales on subsistence-harvest patterns in the communities of Barrow, Atkasuk, and (especially) Nuiqsut as a result of impacts from disturbance and oil spills are expected to make no subsistence resource unavailable, undesirable for use, or experience overall population reductions.</p>

SUBSISTENCE		
Alternative D	Alternative E	Preferred Alternative
<p><b>Multiple Sales:</b> Effects from multiple sales under Alternative D are expected to result in an increase in the amount of displacement of calving TLH caribou within 1.86 to 2.48 mi (3-4 km) of field roads assumed to be built between production pads south of Teshekpuk Lake. This effect is expected to persist over the life of the oil fields and may reduce productivity and abundance of the TLH. Some increase in the impedance of TLH caribou movements to insect relief areas along the coast, north of Teshekpuk Lake is expected under multiple sales. The number of small, chronic crude-oil and fuel spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year. Based on the assumptions discussed in the text, each additional lease sale is expected to have similar effects on arctic fish as described for Alternative D. However, if there are increased levels of activity associated with future lease sales, and/or insufficient recovery time between sales, greater adverse effects than described for Alternative D are likely to occur. Increased disturbance and displacement effects and increased oil-spill risks are expected for birds, but timing of the sales again is critical to recovery. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. The effects of multiple sales and increased potential for noise-producing activities and oil spills on bowhead whales at the resource ranges and activity levels described are expected to be the same as described for Alternative B. Effects to marine mammal populations as a whole from multiple sales under Alternative D are expected to be similar to those under Alternative D with one sale—local and short term, with no significant adverse effects.</p> <p>Given that resource estimates and development scenarios project an increase in resources and increases in the number of drill pads and pipeline miles, logic would assume increased effects to potentially affected resources, except for the fact that these effects would be spread over 2 decades. The biological analyses expect increases in effects with little overall effect to resource populations; therefore, effects associated with multiple sales on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and (especially) Nuiqsut as a result of impacts from disturbance and oil spills are expected to make no subsistence resource unavailable, undesirable for use, or experience overall population reductions. In any case, the cumulative effect of multiple sales under Alternative D would clearly be an increased development "footprint" and consequent increased habitat loss to resources and use area loss to hunters. This could affect subsistence harvests in the communities of Barrow, Atqasuk, and (especially) Nuiqsut and could alter caribou distributions sufficiently to make subsistence-hunter access more difficult. Impacts would be minimized from proposed stipulations and from the work of the Subsistence Advisory Panel designed to address local subsistence and cultural issues throughout the life of the plan.</p>	<p><b>Multiple Sales:</b> The effect of multiple sales under Alternative E is expected to result in an increase in the amount of displacement of calving TLH caribou within 1.86 to 2.48 mi (3-4 km) of field roads. This effect is expected to persist over the life of the oil fields and may reduce productivity and abundance of the TLH. Some increase in impeding TLH caribou movements to insect relief areas along the coast, north of Teshekpuk Lake is expected under multiple sales. The number of small, chronic crude-oil and fuel spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year. Based on the assumptions discussed in the text, each additional sale is expected to have similar effects on arctic fish as described for the single sale for the first sale. However, if there are increased levels of activity associated with future lease sales, and/or insufficient recovery time between sales, greater adverse effects than described for Alternative E are likely to occur. Increased disturbance and displacement effects and increased oil-spill risks are expected for birds, but timing of the sales again is critical to recovery. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. Generally, overall effects are expected to increase substantially from those discussed for the first sale. The effects of multiple sales and increased potential for noise-producing activities and oil spills on bowhead whales at the resource ranges and activity levels described essentially are expected to be the same as described for the first sale. For other marine mammals, multiple sales are expected to have similar effects to those under Alternative E in the first sale, i.e., local and short term, with no significant adverse effects to marine mammal populations as a whole.</p> <p>Given that resource estimates and development scenarios project an increase in resources and large increases in the number of drill pads and pipeline miles, logic would assume increased effects to potentially affected resources, except for the fact that these effects would be spread over 2 decades. The biological analyses expect increases in effects with few overall effects to resource populations; therefore, effects associated with multiple sales on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and (especially) Nuiqsut as a result of impacts from disturbance and oil spills are expected to make no subsistence resource unavailable, undesirable for use, or experience overall population reductions. On the other hand, the cumulative effect of multiple sales clearly would be an increased development "footprint" and consequent increased habitat loss to resources and use loss to hunters. This could affect subsistence harvests in the communities of Barrow, Atqasuk, and (especially) Nuiqsut and could alter caribou distributions sufficiently to make subsistence-hunter access more difficult. Impacts would be minimized from proposed stipulations and from the work of the Subsistence Advisory Panel designed to address local subsistence and cultural issues throughout the life of the plan.</p>	<p><b>Multiple Sales:</b> Effects from multiple sales to terrestrial mammals are expected to increase, but no significant impacts to populations are anticipated. Small numbers of terrestrial mammals would be lost due to the increase of small, chronic crude-oil and fuel spills, but populations are expected to recover within 1 year. Arctic fish populations would experience slightly increased effects but high-density fish areas would be deferred. Increased disturbance and displacement effects and increased oil-spills risks are expected for birds, but timing of the sales again is critical to recovery and prime goose molting habitat is deferred. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. Bowhead whales are expected to experience short-term, nonlethal effects. Effects to seals and polar bear would be short term and local with no adverse effects to populations.</p> <p>Given that resource estimates and development scenarios project an increase in resources and an increase in the number of drill pads and pipeline miles, logic would assume increased effects to potentially affected resources, except for the fact that these effects would be spread over 2 decades. The biological analyses expect slight increases in effects with little overall effects to resource populations; therefore, effects associated with multiple sales on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and (especially) Nuiqsut as a result of impacts from disturbance and oil spills are expected to make no subsistence resource unavailable, undesirable for use, or experience overall population reductions.</p>

SOCIOCULTURAL SYSTEMS		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Due to no increase in effects to the sociocultural systems of Barrow, Atqasuk, and Nuiqsut from this no-action alternative, impacts are expected to be negligible.</p>	<p><b>First Sale:</b> Effects from management actions and oil and gas activities in the planning area under Alternative B are unlikely to disrupt sociocultural systems. Periodic, short-term disturbance effects would be expected on the sociocultural systems of Barrow, Atqasuk, and Nuiqsut but these disturbances are not expected to disrupt or displace institutions and sociocultural systems; community activities; and traditional practices for harvesting, sharing, and processing subsistence resources.</p>	<p><b>First Sale:</b> Effects from management actions and oil and gas activities in the planning area under Alternative C are unlikely to disrupt sociocultural systems. Periodic, short-term disturbance effects would be expected on the sociocultural systems of Barrow, Atqasuk, and Nuiqsut but these disturbances are not expected to disrupt or displace institutions and sociocultural systems; community activities; and traditional practices for harvesting, sharing, and processing subsistence resources.</p>
	<p><b>Multiple Sales:</b> Effects from management actions and oil and gas activities in the planning area for multiple sales under Alternative B could disrupt sociocultural systems for periods up to 1 year, but impacts would not be expected to displace institutions and sociocultural systems, community activities, or traditional practices for harvesting, sharing, and processing subsistence resources.</p>	<p><b>Multiple Sales:</b> Effects from management actions and oil and gas activities in the planning area for multiple sales under Alternative C could disrupt sociocultural systems for periods up to 1 year, but impacts would not be expected to displace institutions and sociocultural systems, community activities, or traditional practices for harvesting, sharing, and processing subsistence resources, the same level of effect anticipated for multiple sales under Alternative B.</p>
COASTAL ZONE MANAGEMENT		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> There are no ground-impacting-management actions within the planning area that require coastal consistency reviews by the State if seismic activity is allowed.</p>	<p><b>First Sale:</b> For Alternative B, conflicts could occur with specific Statewide standards and NSB CMP policies related to potential user conflicts between development activities and access to subsistence resources. Conflicts are possible with the NSB CMP policy related to adverse effects on subsistence resources resulting from periodic disturbance and oil spills, but no resource would become unavailable, undesirable for use, or experience overall population reductions. These effects would occur in the unlikely event of spilled oil contacting subsistence resources and habitats and the activities associated with oil-spill cleanup. No conflicts are anticipated during exploration, since no oil spills are assumed to occur during exploration.</p>	<p><b>First Sale:</b> For Alternative C, the effects of potential conflicts with the State's and Borough's coastal management programs are expected to be about the same as for Alternative B, because no leasing in important caribou and waterfowl areas would occur under Alternative C. Problems could occur with specific Statewide standards and NSB CMP policies related to user conflicts between development activities and access to subsistence resources. Conflicts are possible with the NSB CMP policy related to adverse effects on subsistence resources. These effects could occur as a result of spilled oil contacting subsistence resources and habitats and as a result of the activities associated with oil-spill cleanup. No conflicts are anticipated during exploration.</p>

SOCIOCULTURAL SYSTEMS		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Effects from management actions and oil and gas activities in the planning area under Alternative D are unlikely to disrupt sociocultural systems. Periodic, short-term disturbance effects would be expected on the sociocultural systems of Barrow, Atqasuk, and Nuiqsut but these disturbances are not expected to disrupt or displace institutions and sociocultural systems; community activities; and traditional practices for harvesting, sharing, and processing subsistence resources. Periodic disruptions to subsistence resources could occur, but any disruptions that occurred from oil and gas activities potentially would be mitigated by BLM in-place stipulations designed to protect caribou, waterfowl, fish, moose, and subsistence resources and harvest practices. Overall effects under Alternative D to the sociocultural systems of the communities of Barrow, Atqasuk, and Nuiqsut would increase over those in Alternative B, but there would continue to be no disruption or displacement of cultural institutions or sociocultural systems.</p>	<p><b>First Sale:</b> Effects from management actions and oil and gas activities in the planning area under Alternative E are unlikely to disrupt sociocultural systems. Periodic, short-term disturbance effects would be expected to disrupt or displace institutions and sociocultural systems; community activities; and traditional practices for harvesting, sharing, and processing subsistence resources. Periodic disruptions to subsistence resources could occur, but any disruptions that occurred from oil and gas activities potentially would be mitigated by BLM in-place stipulations and mitigation measures designed to protect caribou, waterfowl, fish, moose, and specifically subsistence resources, subsistence practices, and hunter access. Overall effects under Alternative E to the sociocultural systems of the communities of Barrow, Atqasuk, and Nuiqsut would increase over those in Alternative B, but there would continue to be no disruption or displacement of cultural institutions or sociocultural systems.</p>	<p><b>First Sale:</b> Effects from management actions and oil and gas activities in the planning area under the Preferred Alternative are unlikely to disrupt sociocultural systems. Periodic, short-term disturbance effects would be expected on the sociocultural systems of Barrow, Atqasuk, and Nuiqsut but these disturbances are not expected to disrupt or displace institutions and sociocultural systems; community activities; and traditional practices for harvesting, sharing, and processing subsistence resources. The effects of the Preferred Alternative are expected to be the same as Alternative C.</p>
<p><b>Multiple Sales:</b> Effects from management actions and oil and gas activities in the planning area for multiple sales under Alternative D could disrupt sociocultural systems for periods up to 1 year, but impacts would not be expected to displace institutions and sociocultural systems; community activities; or traditional practices for harvesting, sharing, and processing subsistence resources, the same level of effect anticipated for multiple sales under Alternative B.</p>	<p><b>Multiple Sales:</b> Effects from management actions and oil and gas activities in the planning area for multiple sales under Alternative E could disrupt sociocultural systems for periods up to 1 year, but impacts would not be expected to displace institutions and sociocultural systems; community activities; or traditional practices for harvesting, sharing, and processing subsistence resources, the same level of effect anticipated for multiple sales under Alternative B.</p>	<p><b>Multiple Sales:</b> Effects from management actions and oil and gas activities in the planning area for multiple sales under the Preferred Alternative could disrupt sociocultural systems for periods of &lt;1 year, but impacts would not be expected to displace institutions and sociocultural systems, community activities, or traditional practices for harvesting, sharing, and processing subsistence resources.</p>
COASTAL ZONE MANAGEMENT		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> Potential conflict with the habitat and subsistence standards of the ACMP is anticipated. Overall effects of oil and gas activities for Alternative D are expected to increase effects to terrestrial mammals, marine mammals, and subsistence resources and activities of local communities, over the effects of Alternative B. Although most of the increase in human activities is expected to occur inland, south of the coast, some increase in potential noise and disturbance effects to marine mammals other than bowhead whales are expected to occur in the Colville River Delta-southern Harrison Bay area. The CAH and TLH caribou herds are expected to be disturbed and their movements delayed near the pipeline during periods of air traffic. Surface, air, and foot traffic near oil fields is expected to increase and to displace some terrestrial mammals, but not significantly affect the Arctic Slope populations. If a field is developed in the area south and west of Teshekpuk Lake, some TLH caribou is expected to be displaced within 3 to 4 kilometers of roads and other production facilities over the life of the project. Subsistence resources would be impacted, but no resource would become unavailable, undesirable for use, or experience overall population reductions, resulting in no significant impacts to overall subsistence harvests and harvest patterns.</p>	<p><b>First Sale:</b> Under Alternative E, conflicts could occur with the habitat, subsistence, and water quality standards of the ACMP. Overall effects of oil and gas activities for Alternative E are expected to significantly increase effects to terrestrial mammals, marine mammals, and subsistence resources and activities of local communities, over the effects of Alternative B. Conflicts could occur with specific Statewide standards and NSB CMP policies related to the potential for user conflicts between development activities and access to subsistence resources, and to adverse effects on subsistence resources. These effects would occur in the event of spilled oil contacting subsistence resources and habitats, and the activities associated with oil-spill cleanup. Overall effects associated with Alternative E on subsistence-harvest patterns in the communities of Barrow, Atqasuk, and Nuiqsut, and other nearby communities from oil and gas activities in the planning area as a result of impacts from disturbance and oil spills are expected to increase over Alternative B. Subsistence resources would be chronically impacted, but still no resource would become unavailable, undesirable for use, or experience overall population reductions. Overall, effects are not expected to have significant impacts on subsistence-harvest patterns in Barrow and Atqasuk, although oil-development activity under Alternative E could make Nuiqsut's pursuit of caribou more difficult for at least an entire harvest season.</p>	<p><b>First Sale:</b> Under the Preferred Alternative, conflicts could occur with specific Statewide standards and NSB CMP policies related to potential user conflicts between development activities and access to subsistence resources. Conflicts are possible with the NSB CMP policy related to adverse effects on subsistence resources resulting from periodic disturbance and oil spills, but no resource would become unavailable, undesirable for use, or experience overall population reductions. These effects would occur in the unlikely event of spilled oil contacting subsistence resources and habitats and the activities associated with oil-spill cleanup. However, the stipulations in place under the preferred alternative will reduce conflicts and the preferred alternative would be consistent with ACMP standards.</p>

COASTAL ZONE MANAGEMENT		
Alternative A	Alternative B	Alternative C
	<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alternation is expected with multiple sales, but should not significantly affect coastal plain bird populations. Effects from multiple sales to terrestrial mammals are expected to increase, but no significant impacts to populations are anticipated. Small numbers of terrestrial mammals would be lost due to the increase of small, chronic crude-oil and fuel spills, but populations are expected to recover within 1 year (Sec. IV.C.9). Arctic fish populations would experience effects from seismic surveys and pipelines similar to those discussed for the first sale (i.e., no measurable effect on arctic fish populations). However, fuel and oil spills are likely to have a greater effect on fish populations than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater effects than estimated for multiple sale. Increased disturbance and displacement effects and increased oil-spills risks are expected to increase for birds in the southern half of the planning area under Alternative B with multiple sales, but not significantly affect coastal plain populations. Bowhead whales exposed to noise-producing activities such as marine-vessel traffic and possibly aircraft overflights most likely would experience temporary, nonlethal effects. Effects of multiple sales and increased potential for noise-producing activities and oil spills to marine mammals would be short term and local with no adverse effects to populations. Multiple sales may cause potential conflicts with the subsistence, habitat, air- and water-quality, and transportation standards of the ACMP; however, each oil and gas lease operating plan would be reviewed for consistency on a case-by-case basis.</p>	<p><b>Multiple Sales:</b> Displacement of birds from disturbance and habitat alternation is expected with multiple sales, but should not significantly affect coastal plain bird populations. Effects from multiple sales to terrestrial mammals are expected to increase, but no significant impacts to populations are anticipated. Small numbers of terrestrial mammals would be lost due to the increase of small, chronic crude-oil and fuel spills, but populations are expected to recover within 1 year (Sec. IV.C.9). Arctic fish populations would experience effects from seismic surveys and pipelines similar to those discussed for the first sale (i.e., no measurable effect on arctic fish populations). However, fuel and oil spills are likely to have a greater effect on fish populations than the first sale. Insufficient recovery time between sales and/or greater levels of activity would be likely to result in greater effects than estimated for multiple sale. Increased disturbance and displacement effects and increased oil-spills risks are expected to increase for birds in the southern half of the planning area under Alternative B with multiple sales, but not significantly affect coastal plain populations. Bowhead whales exposed to noise-producing activities such as marine-vessel traffic and possibly aircraft overflights most likely would experience temporary, nonlethal effects. Effects of multiple sales and increased potential for noise-producing activities and oil spills to marine mammals would be short term and local with no adverse effects to populations. Multiple sales may cause potential conflicts with the subsistence, habitat, air- and water-quality, and transportation standards of the ACMP; however, each oil and gas lease operating plan would be reviewed for consistency on a case-by-case basis.</p>

COASTAL ZONE MANAGEMENT		
Alternative D	Alternative E	Preferred Alternative
<p><b>Multiple Sales:</b> Effects from multiple sales under Alternative D may result in potential conflict with the habitat and subsistence standards of the ACMP. Multiple-sales effects under alternative D are expected to result in an increase in the amount of displacement of calving TLH caribou within 1.86 to 2.48 mi (3-4 km) of field roads assumed to be built between production pads south of Teshekpuk Lake. This effect is expected to persist over the life of the oil fields and may reduce productivity and abundance of the TLH. Some increase in the impedance of TLH caribou movements to insect relief areas along the coast, north of Teshekpuk Lake is expected under multiple sales. Small, chronic crude-oil and fuel spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year. Based on the assumptions discussed in the text, each additional lease sale is expected to have similar effects on arctic fish as described for the first sale. However, if there are increased levels of activity associated with future lease sales, and/or insufficient recovery time between sales, greater adverse effects than described for the first sale are likely to occur. Increased disturbance and displacement effects and increased oil-spill risks are expected for birds, but timing of the sales again is critical to recovery. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. The effects of multiple sales and increased potential for noise-producing activities and oil spills on bowhead whales at the resource ranges and activity levels described essentially are expected to be the same as described for the first sale. Effects to marine mammal populations as a whole from multiple sales under Alternative D are expected to be similar to those with one sale—local and short term, with no significant adverse effects. Under Alternative D, it is expected that protections for birds, fish, waterfowl, and terrestrial mammals, water quality, and subsistence-hunter concerns about access to resources and resource contamination would be addressed by stipulations.</p>	<p><b>Multiple Sales:</b> Effects from multiple sales under Alternative E are expected to result in potential conflict with the habitat, subsistence, and water-quality standards of the ACMP. The effect of multiple sales under Alternative E is expected to result in an increase in the amount of displacement of calving TLH caribou within 1.86 to 2.48 mi (3-4 km) of field roads. This effect is expected to persist over the life of the oil fields and may reduce productivity and abundance of the TLH. Some increase in the impedance of TLH caribou movements to insect relief areas along the coast, north of Teshekpuk Lake is expected under multiple sales. The number of small, chronic crude-oil and fuel spills is expected to increase and result in the loss of small numbers of terrestrial mammals, with recovery expected within 1 year. Additional sales are expected to have similar effects on arctic fish as described for the first sale. However, if there are increased levels of activity associated with future lease sales, and/or insufficient recovery time between sales, greater adverse effects than described for the first sale are likely to occur. Increased disturbance and displacement effects and increased oil-spill risks are expected for birds, but timing of the sales again is critical to recovery. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. The effects of multiple sales and increased potential for noise-producing activities and oil spills on bowhead whales at the resource ranges and activity levels described essentially are expected to have similar effects to those under Alternative E in the first sale, i.e., local and short term, with no significant adverse effects to marine mammal populations as a whole.</p>	<p><b>Multiple Sales:</b> Effects from multiple sales to terrestrial mammals are expected to increase, but no significant impacts to populations are anticipated. Small numbers of terrestrial mammals would be lost due to the increase of small, chronic crude-oil and fuel spills, but populations are expected to recover within 1 year (Sec. IV.G.9). Arctic fish populations would experience slightly increased effects but high-density fish areas would be deferred. Increased disturbance and displacement effects and increased oil-spills risks are expected for birds, but timing of the sales again is critical to recovery and prime goose molting habitat is deferred. With extended intervals between sales, impacted bird populations are expected to recover from noise and disturbance effects in 1 year. Bowhead whales are expected to experience short-term, nonlethal effects. Effects to seals and polar bear would be short term and local with no adverse effects to populations.</p> <p>Given that resource estimates and development scenarios project an increase in resources and an increase in the number of drill pads and pipeline miles, logic would assume increased effects to potentially affected resources, except for the fact that these effects would be spread over 2 decades. The biological analyses expect slight increases in effects with little overall effects to resource populations; therefore, effects associated with multiple sales on subsistence-harvest patterns in the communities of Barrow, Atkasuk, and (especially) Nuiqsut as a result of impacts from disturbance and oil spills are expected to make no subsistence resource unavailable, undesirable for use, or experience overall population reductions.</p>

RECREATION AND VISUAL RESOURCES		
Alternative A	Alternative B	Alternative C
<p><b>First Sale:</b> Impacts to recreation and visual resources from activities other than oil and gas would be minimal and short term, affecting about 1,500 acres. Impacts from ongoing oil and gas activities (seismic surveys) also would be short term, affecting about 500 acres. Several hundred miles of green trails from overland moves and seismic surveys also would be visible during summer months.</p>	<p><b>First Sale:</b> As compared to Alternative A, there would be an increase of approximately 500 acres to 2,000 acres in adverse, short-term impacts to recreation values from activities other than oil and gas exploration and development. Short-term impacts from ongoing oil and gas exploration activities would impact approximately 9,000 acres. The greening of vegetation resulting from ice pads, roads, airstrips, and compacted snow would impact about 500 acres. Seismic operations would result in several hundred miles of green trails, possibly double those of Alternative A.</p> <p>Oil and gas development would result in the long-term loss of scenic quality, solitude, naturalness, or primitive/unconfined recreation over an area of approximately 72,000 acres (or 1.6% of the planning area) for the life of production fields and pipelines.</p>	<p><b>First Sale:</b> As compared to Alternative A, there would be an increase of approximately 500 acres to 2,000 acres in adverse, short-term impacts to recreation values from activities other than oil and gas exploration and development. As compared to Alternative B, short-term impacts from ongoing oil and gas exploration activities would increase from approximately 9,000 acres impacted to approximately 17,500 acres. The greening of vegetation resulting from ice pads, roads, airstrips, and compacted snow would increase to about 750 acres, a 250-acre increase from Alternative B. Seismic operations would result in several hundred miles of green trails with likely increases over Alternative B directly corresponding to increases in seismic operations.</p> <p>Oil and gas development would result in the long-term loss of scenic quality, solitude, naturalness, or primitive/unconfined recreation over an area of approximately 82,000 acres (or 1.8% of the planning area) for the life of production fields and pipelines. This is 10,000 acres more than under Alternative B.</p>
	<p><b>Multiple Sales:</b> Long-term impacts would increase about 40 percent over those of the first sale, ultimately affecting about 90,000 acres or 1.9 percent of the planning area.</p>	<p><b>Multiple Sales:</b> Long-term impacts will accumulate and increase about 45 percent above those of the first sale, ultimately affecting approximately 170,000 acres or about 2.3 percent of the planning area.</p>

RECREATION AND VISUAL RESOURCES		
Alternative D	Alternative E	Preferred Alternative
<p><b>First Sale:</b> As compared to Alternative A, there would be an increase of approximately 1,500 acres to 3,000 acres in adverse, short-term impacts to recreation values from activities other than oil and gas exploration and development. As compared to Alternative B, short-term impacts from ongoing oil and gas exploration activities would increase from approximately 9,000 acres to 34,000 acres. The greening of vegetation resulting from ice pads, roads, airstrips, and compacted snow would increase to about 1,400 acres, a 900-acre increase from Alternative B. Seismic operations would result in several hundred miles of green trails with likely increases over Alternative B directly corresponding to increases in seismic operations.</p> <p>Oil and gas development would result in the long-term loss of scenic quality, solitude, naturalness, or primitive/unconfined recreation over an area of approximately 123,000 acres (or 2.5% of the planning area) for the life of production fields and pipelines. This is 41,000 acres more than under Alternative B.</p>	<p><b>First Sale:</b> As compared to Alternative A, there would be an increase of approximately 1,500 acres to 3,000 acres in adverse, short-term impacts to recreation values from activities other than oil and gas exploration and development. As compared to Alternative B, short-term impacts from ongoing oil and gas exploration activities would increase from approximately 9,000 acres to 34,500 acres in short-term impacts from active drilling operations. The greening of vegetation from ice pads, roads, airstrips, and compacted snow would increase to about 1,900 acres, a 1,400-acre increase from Alternative B. Oil and gas development would result in a long-term loss of scenic quality, solitude, naturalness, or primitive/unconfined recreation over an area of approximately 228,600 acres (or 5.0% of the planning area) for the life of production fields and pipelines. This is 156,600 acres more than under Alternative B.</p>	<p><b>First Sale:</b> There would be approximately 2,000 acres in adverse, temporary impacts to recreation values from activities other than oil and gas exploration and development. Short-term (temporary) impacts from ongoing oil and gas exploration activities would impact approximately 26,000 acres. The greening of vegetation resulting from ice pads, roads, airstrips, and compacted snow would impact about 850 acres. Seismic operations would result in many hundreds of miles of green trails.</p> <p>Oil and gas development would result in the long-term loss of scenic quality, solitude, naturalness, or primitive/unconfined recreation over an area of approximately 101,000 acres (or 2.2% of the planning area) for the life of production fields and pipelines.</p>
<p><b>Multiple Sales:</b> Long-term impacts would accumulate and increase about 67 percent above those of the first sale, ultimately affecting approximately 192,000 acres or about 4.2 percent of the planning area.</p>	<p><b>Multiple Sales:</b> Long-term impacts would accumulate and increase about 51 percent above those of the first sale, ultimately affecting approximately 307,000 acres or about 6.7 percent of the planning area.</p>	<p><b>Multiple Sales:</b> Long-term impacts will increase about 18 percent over those of the single sale, ultimately affecting about 119,000 acres or 2.6 percent of the planning area</p>

**Table II.F.1 Federal, State, and North Slope Borough Permits And/or Approvals  
For Oil and Gas Exploration and Development/production Activities**

Regulatory Agency	Permit/Approval Requirements
<b>FEDERAL</b>	
<b>U.S. Army Corps of Engineers (Corps)</b>	<ul style="list-style-type: none"> <li>• <b>Issues</b> a Section 404 permit under the Federal Water Pollution Control Act of 1972, as amended (Clean Water Act) (33 USC 1344) for discharge of dredged and fill material into U.S. waters, including wetlands.</li> <li>• <b>Issues</b> a Section 10 permit under the Rivers and Harbors Act of 1899 (33 USC 403) for structures or work in, or affecting, navigable waters of the U.S.</li> <li>• <b>Issues</b> a Section 103 Ocean Dumping permit under Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 (? USC ? ) for transport of dredged material for ocean disposal.</li> </ul>
<b>U.S. Environmental Protection Agency (EPA)</b>	<ul style="list-style-type: none"> <li>• <b>Issues</b> a National Pollutant Discharge and Elimination System (NPDES) Permit and Fact Sheet under Section 402, Federal Water Pollution Control Act of 1972, as amended (Clean Water Act) (33 USC 1251) for discharges into the marine environment.</li> <li>• <b>Issues</b> an Underground Injection Control Class 1 Industrial Well permit under the Safe Drinking Water Act (40 CFR 124 A, 40 CFR 144, 40 CFR 146) for underground injection of Class I (industrial) waste materials.</li> <li>• <b>Issues</b> a Spill Prevention Containment and Countermeasure (SPCC) Plan under Section 311, Federal Water Pollution Control Act (Clean Water Act) as amended, (40 CFR 112) for storage of over 660 gallons of fuel in a single container or over 1,320 gallons in aggregate in tanks above ground.</li> <li>• <b>Conducts</b> a review and evaluation of the Draft and Final EIS for compliance with CEQ guidelines (40 CFR 1500-1508) and Section 309 of the Clean Air Act.</li> <li>• <b>Authority</b> delegated to ADEC to issue air quality permits for facilities operating within state jurisdiction, a Title V operating permit and a Prevention of Significant Deterioration (PSD) permit under the Clean Air Act, as amended (42 USC 7401), to address air pollutant emissions.</li> </ul>
<b>National Marine Fisheries Service (NMFS)</b>	<ul style="list-style-type: none"> <li>• <b>Endangered Species Act consultation</b> under the Endangered Species Act of 1973, Section 7(a)(2) for effects to threatened or endangered species.</li> <li>• <b>Fish and wildlife consultation</b> under Fish and Wildlife Coordination Act for effects to fish and wildlife resources.</li> <li>• <b>Marine mammal consultation</b> under the Marine Mammal Protection Act for effects to marine mammals.</li> <li>• <b>Issues</b> incidental Harassment Authorization under the Marine Mammal Protection Act for incidental takes of marine mammals (bowhead whales and ringed seals).</li> </ul>
<b>U.S. Department of Interior, Bureau of Land Management (BLM)</b>	<ul style="list-style-type: none"> <li>• <b>Reviews and approves</b> Applications for Permit to Drill (including a drilling plan and surface use plan of operations) and Subsequent Well Operations as prescribed in 43 CFR Part 3160, under authority of the Mineral Leasing Act of 1920 (30 USC Sec. 181 <i>et seq.</i>) and other federal laws, for development and production of federal leases.</li> <li>• <b>Approves</b> lease administration requirements including Unit Agreements and plans of development, Communitization Agreements, Participating Area Determinations, as described in 43 CFR 3130 and 3180, under the Mineral Leasing Act of 1920 (30 USC Sec. 181 <i>et seq.</i>), Federal Oil and Gas Royalty Management Act of 1982 (42 USC 4321 <i>et seq.</i>), Naval Petroleum Reserve Production Act of 1976 (42 USC 6504), and the Department of the Interior Appropriations Act, Fiscal Year 1981 (42 USC 6508), and other federal laws, for exploration and development of one or more leases.</li> <li>• <b>Issues</b> geophysical permits as described in 43 CFR 3150, under authority of the Mineral Leasing Act of 1920 (30 USC Sec. 181 <i>et seq.</i>), Alaska National Interest Lands Conservation Act (16 USC 1301 <i>et seq.</i>), Federal Land Policy and Management Act of 1976 (43 USC 1701 <i>et seq.</i>), Naval Petroleum Reserve Production Act of 1976 (42 USC 6504), and the Department of the Interior Appropriations Act, Fiscal Year 1981 (42 USC 6508), to conduct seismic activities.</li> <li>• <b>Issues</b> right-of-way grants and temporary use permits under Section 28 of the Mineral Leasing Act of 1920 (30 USC Sec 185), 43 CFR Subpart 2880-2887, for the construction, operation, and maintenance of pipeline, production, and related facilities.</li> <li>• <b>Authority delegated</b> to ADEC for review and approval of an Oil Discharge Prevention and Contingency Plan (ODPCP) and Certification of Financial Responsibility (COFR) under Section 4202(b)(4) of the Oil Pollution Act of 1990 (OPA90); Sec. 311(j)(5) of the Federal Water Pollution Control Act; 30 CFR 254, for accidental oil discharge into navigable waters.</li> </ul>

Regulatory Agency	Permit/Approval Requirements
<b>U.S. Fish and Wildlife Service (USFWS)</b>	<ul style="list-style-type: none"> <li>• <b>Endangered Species Act Consultation</b> under the Endangered Species Act of 1973, Section 7(a)(2) for effects to threatened or endangered species.</li> <li>• <b>Fish and wildlife consultation</b> under Fish and Wildlife Coordination Act for effects to fish and wildlife resources.</li> <li>• <b>Issues</b> a Letter of Authorization under the Marine Mammal Protection Act for incidental takes of marine mammals.</li> </ul>
<b>STATE</b>	
<b>Alaska Department of Environmental Conservation (ADEC)</b>	<ul style="list-style-type: none"> <li>• <b>Issues</b> a Certificate of Reasonable Assurance under Section 401, Federal Water Pollution Control Act of 1972, as amended in 1977 (Clean Water Act) (33 USC 1341); AS 46.03.020; 11 AAC 15; 18 AAC 70; 18 AAC 72 for discharge of dredged and fill material into U.S. waters.</li> <li>• <b>Issues</b> a Certificate of Reasonable Assurance/NPDES and Mixing Zone Approval under Section 402, Federal Water Pollution Control Act of 1972, as amended (Clean Water Act) (33 USC 1341 et seq.); AS 46.03.020, .100, .110, .120, &amp; .710; 11 AAC 15; 18 AAC 15, 70, 010 &amp; 72.500 for wastewater disposal into all state waters.</li> <li>• <b>Issues</b> a Class I well wastewater disposal permit under AS 46.03.020, 050, and 100 for underground injection of nondomestic wastewater.</li> <li>• <b>Reviews and approves</b> all public water systems including plan review, monitoring program, and operator certification under AS 46.03.020, 050, 070, and 720, 18 AAC 80.005.</li> <li>• <b>Reviews and approves</b> the Oil Discharge Prevention and Contingency Plan (ODPCP) and the Certificate of Financial Responsibility (COFR) under AS 46.04.030, 18 AAC 75 et seq. for storage or transport of oil.</li> <li>• <b>Issues</b> a Title V Operating Permit and a Prevention of Significant Deterioration (PSD) permit under Clean Air Act Amendments (Title V) for air pollutant emissions.</li> <li>• <b>Issues</b> solid waste disposal permit under AS 46.03.010, 020, 100, and 110; AS 46.06.080; 18 AAC 60.005 and 200, for disposal of solid waste on state lands.</li> <li>• <b>Reviews and approves</b> solid waste processing and temporary storage facilities plan under AS 46.03.005, 010, and 020, 18 AAC 60.430, for handling and temporary storage of solid waste on federal and state land.</li> </ul>
<b>Department of Fish and Game (ADFG)</b>	<ul style="list-style-type: none"> <li>• <b>Issues</b> a Fish Habitat Permit under AS 16.05.840 (Fishway Act) and AS 16.05.820 (Anadromous Fish Act).</li> </ul>
<b>Office of the Governor/ Division of Governmental Coordination (DGC)</b>	<ul style="list-style-type: none"> <li>• <b>Conducts</b> a Coastal Zone Consistency review under Coastal Zone Management Act of 1972, as amended in 1976 (16 USC 1451 et seq.); AS 46.40 Alaska Coastal Management Program Act of 1977; 6 AAC 50 and issues determination of consistency of proposed development within the coastal zone.</li> </ul>
<b>Department of Natural Resources (DNR)</b>	<ul style="list-style-type: none"> <li>• <b>Issues</b> a Material Sales Contract under AS 38.05.850; 11 AAC 71.070 through .075 for mining and purchase of gravel from state lands.</li> <li>• <b>Issues</b> a Right-of-way (ROW) and Land Use permits under AS 38.05.850 for use of state land; ice road construction on state land and state freshwater bodies.</li> <li>• <b>Issues</b> a Temporary Water Use and Water Rights permit under AS 46.15 for water use necessary for construction and operations.</li> <li>• <b>Issues</b> pipeline right-of-way leases for pipeline construction and operation across state lands under AS 38.35.020.</li> <li>• <b>Issues</b> a Cultural Resources Concurrence under the National Historic Preservation Act of 1966, as amended (16 USC 470 et seq.); AS 41.35.010 to .240, Alaska Historic Preservation Act for developments that may affect historic or archaeological sites.</li> </ul>
<b>BOROUGH</b>	
<b>North Slope Borough (NSB)</b>	<ul style="list-style-type: none"> <li>• <b>Coastal Zone Consistency Determination</b> under the Coastal Zone Management Act of 1972, as amended in 1976 (16 USC 1451) (AS 46.40 Alaska Coastal Management Program, 1977; Borough Ordinance 90-39 [6/19/90]), to address project planning of development within the coastal zone.</li> </ul>

